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ET

PROCÈS-VERBAUX DES RÉUNIONS

Volume 145

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Septembre-Octobre

1957

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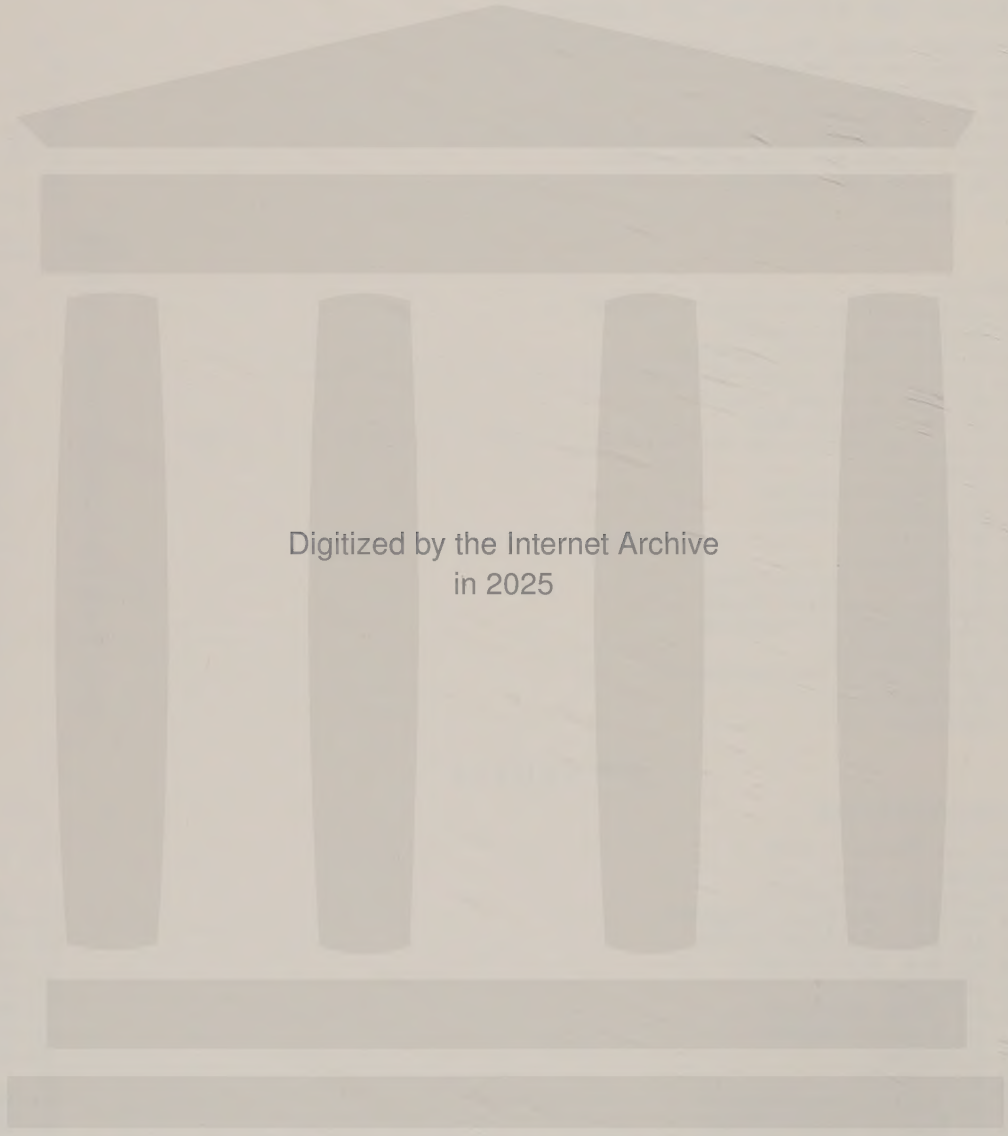

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Service de Publications: Mme H. Harder, Mme M. Larvig.

Service Statistique: Mlle E. Christiansen, Mlle M. Goodman.

Service Hydrographique: M. J. Smed, Mag. scient. et Cand. mag., Hydrographe. Mme P. Holm, Mme R. Larsen, Mme I. Bondorff, M. P. Alnøe.

AGENDA

for the forty-fifth Meeting of the International Council for the Exploration of the Sea.
Bergen, 30th September—8th October, 1957.

A. General Assembly: Opening Meeting.

1. Welcome and Opening Address by the President.
2. Outline of the Programme of the Meeting.
3. Presentation of Administrative Report.
4. Report on Permanent Commission.
5. Report on International Whaling Commission.
6. Report on International Commission for the Northwest Atlantic Fisheries.
7. Report on Working Group on Oceanography of CSAGI. International Geophysical Year.

B. Meeting of Delegates.

8. Opening of the Proceedings by the President.
9. Presentation of Estimated Statement of Accounts for 1956/1957.
10. Election of President, First Vice-President, and three Vice-Presidents.
11. Consideration of the Consultative Committee's Recommendations approved by the Bureau.
12. Adoption of the Administrative Report.
13. Final Approval of the Accounts for 1955/1956.
14. Estimate for the Financial Year 1957/1958.
15. Nomination of Finance Committee Members and Editors.
16. Other Business.

C. General Assembly: Final Meeting.

17. Opening of the Proceedings by the President (including Budget Summary).
18. Presentation of Recommendations adopted by the Council.
19. Time and Place for next Council Meeting.
20. Other Business.
21. Conclusion of the Meeting.

1ÈRE PARTIE

PROCÈS-VERBAUX

REPORT

of

THE FORTY-FIFTH MEETING OF THE COUNCIL

General Assembly, Opening Meeting, Monday, 30. September 1957, at 10.00 a. m.

Agenda, Point 1. Dr. TÅNING, in opening the meeting, adressed the company as follows:—

"Ladies and Gentlemen,

We meet here in the hour of mourning for Norway's beloved King, and I propose that we show our sympathy with out hosts by devoting a moment to the late King's memory."

The meeting stood in silence.

"I extend to you a cordial welcome to the 45th Statutory Meeting of the International Council for the Exploration of the Sea. It is, however, with profound sorrow that in accordance with the Rules of the Council I take the President's chair and address a few words to you in commemoration of our late President. In his own field of science H. U. SVERDRUP was one of the greatest of Norway's sons and his reputation was world-wide. His death is an irreparable loss to his family, to his country, and to all his many colleagues throughout the world, not least those in the International Council for the Exploration of the Sea. After his return from California, SVERDRUP stood as a symbol of unity in the Council. He was the Senior Delegate for Norway from 1948 to 1956, Chairman of the Hydrographical Committee from 1950 to 1954, Vice-President from 1951 to 1955, and finally President. I shall not attempt to describe his scientific activities which lay in many fields, but I may just say that his enormous knowledge and his clear conception of the road which oceanographers should follow in order to progress will be greatly missed, especially as he also saw clearly the way in which his branch of science might serve the interests of the fishing industry. SVERDRUP never sought to impress his views on people by long words or an overbearing manner, but his quiet wise doing and his modest behaviour induced everyone to listen to him and to have confidence in his judgement; everything he did was coloured by his humanity and to work with him was a very great experience.

On behalf of the International Council I take the liberty of expressing our gratitude to this great Norwegian scientist for his leadership and friendly collaboration. He possessed both the ability and the will to serve as a humble builder of science and the helper of his fellow-men. Let us devote a moment to his memory."

The meeting stood in silence.

Dr. TÅNING continued:—

"Last year the Council gladly accepted the Norwegian Government's invitation to hold its Annual Meeting in Bergen, the foremost of Norway's fishing ports. In expressing thanks for this, we may recall that one of the meetings at which this Council was constituted took place in Norway in 1901 and was attended by such famous marine scientists as JOHAN HJORT, FRIDTJOF NANSEN, and H. H. GRAN. It is my hope that all of us may enjoy and profit by this meeting and that valuable results may be obtained.

As may be seen from the Agenda you have before you, plenty of hard work awaits us at this conference during the days to come, and it appears from the numerous reports and contributions that the passed year has been a fruitful year. I may draw attention to a few events which have taken place since we last met, events which seem promising for future work. In the course of the past year, with the assistance of selected experts and with financial contributions

from the countries concerned, the Council itself commenced a large-scale investigation of a fish stock in the southern North Sea; it was considered necessary that the Council should undertake this task of clearing up a complicated question. In addition a joint meeting has been held between experts from the Commission for the Northwest Atlantic Fisheries, from this Council, and from FAO. It seems that both these events have been successful, and we may hope that valuable results will be obtained from similar collaborations in the future."

Dr. TÅNING then called on Mr. SUNNANÅ, the Norwegian Director of Fisheries, who spoke as follows:—

"The Norwegian Minister of Fisheries, Mr. NILS LYSØ, had in mind to attend, on behalf of the Norwegian Government, this opening session and as far as possible the whole 45th meeting of the International Council for the Exploration of the Sea. Owing to circumstances beyond his control he is not to-day in the position to do so.

On behalf of the Norwegian Government, on behalf of the Minister of Fisheries, and on behalf of other Norwegian authorities concerned, and also on behalf of the whole Norwegian fishing industry, I have the great honour and pleasure to bid you all, you Mr. President, the Members of the Bureau, the Secretary General and the Staff, the Delegates, Advisers, Observers, and other Guests, welcome to Norway and to Bergen.

It is not necessary for me to tell you that fisheries are of great importance to the economy of Norway and that we in Norway attach great importance to the work you are doing. You have learnt that better than I can tell you from your co-operation with Norwegian scientists since ICES was created, and even before, and up to this time. International co-operation in fisheries research work for more than half a century is the real value of ICES, and our own participation in this work—and that may be true for Norway as well as other countries—is more convincing than any statement made by me or any other representative from a member nation.

With your permission I would like to stress one special problem. As you know, there is at present a great development in all kinds of science, and also in all research on the sea. There is a great development in methods and in the use of other sciences. All kinds of new equipment are being used in this research work. I will not deal with that, however, but may mention that in our time there is a special necessity for what the Americans call 'public relations'. And what is that in your case? It is your relations with the fishing industry and the fishermen. You have to gain the confidence of the fishermen if your hard and very valuable work is to be of real benefit to the fishing industry. You can say, as a great Statesman said in the last world war on behalf of the allied forces: 'Give us the tools, and we will do the job'. In many cases the fishermen, the fisheries authorities, and the Parliaments reverse this and say: 'If you can do the job, we will give you the tools.'

From having had to look at fishery problems, I feel the need to emphasize the importance of good confidence and good relations existing between all parties engaged in the conduct of fisheries, and we have all of us to do our best to achieve this.

This is the view of the Norwegian Government, but it is more than that; it is the common view which unites us all in international co-operation for the promotion of fisheries.

And let us also have in mind the fish itself. The fish is our friend, and we know that it is man's obligation to take care of the fish in order that as one of the living resources of the sea, it will be a lasting support for a commercially sound fishing industry; it is of the highest value possible for the nutrition of the world.

I am very glad to have this opportunity to welcome you to Norway and Bergen. I should like to say in what high regard are hold the institution, ICES, and to express to you our best wishes for the work of the meeting and for your stay in Bergen."

Dr. TÅNING then suggested the following telegrams to be sent:—

"A sa Majesté le Roi de la Norvège.

Les Membres du Conseil International pour l'Exploration de la Mer réunis à Bergen demandent à Votre Majesté de bien vouloir accepter avec leurs sincères condoléances pour le deuil qui frappe Votre Majesté et la Norvège, l'expression de leurs sentiments très respectueux.

Å. VEDEL TÅNING
Acting President."

"A sa Majesté le Roi de Danemark.

Réunis à Bergen, les Membres du Conseil International pour l'Exploration de la Mer demandent la permission de témoigner à Votre Majesté leurs sentiments les plus respectueux.

Å. VEDEL TÅNING
Acting President."

"Madame H. U. SVERDRUP.

Réunis à Bergen, les Membres du Conseil International pour l'Exploration de la Mer, conscients des inestimables services rendus à la science par leur regretté Président, le Professeur H. U. SVERDRUP, adressent à Madame SVERDRUP l'éxpression de leur profonde sympathie.

Å. VEDEL TÅNING
Acting President."

Dr. K. A. ANDERSSON and Mr. A. T. A. DOBSON:
"The members of the International Council for the Exploration of the Sea send affectionate greetings and sincere wishes."

Å. VEDEL TÅNING
Acting President."

Dr. TÅNING continued:—

"I regret to announce the deaths of four former members of ICES since we last met:—

Professor B. HELLAND-HANSEN, Director of the Geophysical Institute, Bergen, died on 7. September last; he was a Norwegian Delegate in 1909, Expert in 1906—1907, and a Guest in 1934. In HELLAND-HANSEN the hydrographers have lost a famous colleague.

Admiral RAFAEL GARCIA-RODRIGUEZ died on 5. March. He was Senior Delegate for Spain from 1945 to 1956.

Dr. HENRI HELDT died on 15. December 1956. He was a French Expert from 1948 to 1953 and Chairman of the Western Mediterranean Sub-Committee from 1948 to 1950.

Dr. L. LAMBERT passed away two months ago. He was a French Expert and a member of the Shellfish Committee.

Dr. HAROLD THOMPSON, the former Director of the Fisheries Division of Cronulla, Australia, passed away on 5. May 1957. Dr. THOMPSON participated in the meetings of the Council some few years ago, and will undoubtedly be remembered by many of you present here.

Let us devote a moment for their memory."

The meeting stood in silence.

"Among the Delegates Dr. A. RAMALHO of Portugal has retired owing to ill health. Dr. RAMALHO was a Delegate for thirty years (from 1926 to 1956) and Vice-President from 1948 to 1951. He will be very much missed by all his friends in the Council and we are proud to have known this highly skilled and friendly man. I propose that the Council send a telegram to him as follows:—

Dr. A. RAMALHO.

The Council wish to express their gratitude for your co-operation through many years and wish you all good luck in the future.

Å. VEDEL TÅNING
Acting President.

Dr. B. HAVINGA, Netherlands, has asked me to convey his best wishes and thanks to the Council. His letter runs as follows:—

Monsieur le Président,

La réunion du Conseil de l'année passée aurait été la dernière à laquelle j'aurais pris part, si une maladie ne m'avait pas empêché d'y assister. Par conséquent il m'a été impossible, à mon grand regret, de prendre congé de mes nombreux amis et collègues dans le Conseil.

Je vous serais très reconnaissant si vous vouliez avoir la bonté de transmettre mes sincères adieux à mes amis et collègues.

Je vous prie d'accepter surtout mes meilleurs vœux pour l'avenir du Conseil que je souhaite prospère.

Veuillez agréer, Monsieur le Président, l'expression de mes sentiments les plus respectueux.

B. HAVINGA

I have the pleasure of welcoming Italy as a new member of the Council. Italy was a member country of the Council from 1927 to 1932. The Delegates for Italy are Professor MARIO PICOTTI and Professor CARLO MALDURA, whom we welcome.

I extend a welcome to Dr. HERCULANO VILELA as a Delegate for Portugal and to Admiral Don ARTURO GÉNOVA Y TORRUELLA for Spain.

I also welcome Professor MAŃKOWSKI, Poland, and Dr. KORRINGA from the Netherlands.

I welcome also our Guests and Observers from other scientific bodies, many of whom are old friends and collaborators."

Agenda, Point 2. Dr. TÅNING called on Mr. SUNNANÅ who said a few words about entertainments during the week.

Agenda, Point 3. Dr. TÅNING drew attention to the Administrative Report of the Office and announced that copies of the Administrative Reports of Committees would be found in the members' pigeon-holes.

Agenda, Point 4. Dr. TÅNING called upon Dr. HULT, who gave the following report on the work of the Permanent Commission:—

"I have been asked by the President of the Permanent Commission to tell you briefly what has happened during the past year within the scope of the 1946 Convention for the Regulation of the Meshes of Fishing Nets and the Size Limits of Fish.

At the fifth meeting of the Permanent Commission in May 1956 the Commission agreed that the sixth meeting should be held in London in May 1957. At this meeting the most important item on the Agenda would have been, I think, the Memorandum summarizing the views of the Contracting Governments on the report of the *ad hoc* Committee established at the fourth meeting of the Permanent Commission in September 1955, under the chairmanship of Mr. ROLLEFSEN. Force of circumstances, however, caused the meeting to be postponed and it has now been fixed to begin on 22. October next.

There are, accordingly, no new decisions of the Permanent Commission to report to this meeting of the Council. Nevertheless, I think this last year has been well spent, so far as the future of the Permanent Commission is concerned. The report of Mr. ROLLEFSEN's *ad hoc* Committee has been translated into several languages and has been brought to the attention of the fishing industry in a number of different countries. As a result of the discussions, partly within the fishery organizations, partly between these organizations and government departments, the principles of fishery dynamics and the guiding principles for future fishery regulation and conservation must now be known by the fishermen who take an interest in the future of their industry. The educational effect of the report, and the discussions to which it has given rise, seem to me to be of the utmost importance as a foundation for further work in fishery conservation.

A report on the recommendations and proposals of the Contracting Governments in connexion with

the *ad hoc* Committee report will be presented at the coming meeting by Dr. LUCAS.

At the fifth meeting of the Permanent Commission another committee was appointed, with Mr. LIENESCH as Convener, to study the difficulties that arise in the administration of Article 6 of the Convention and to consider possible methods of overcoming these obstacles. The report of this Committee will be laid before the Commission at the meeting, as will be the reports of the Liaison Committee of this Council, together with other reports and documents.

Although during the past year no resolutions have been passed by the Permanent Commission, there has nevertheless been a lot of activity within the scope of the Commission."

Agenda, Point 5. Dr. TÅNING then called upon Mr. G. J. LIENESCH, Chairman of the International Whaling Commission, who summarized the following report:—

"All the 17 Contracting Governments were represented with the exception of Panama. Argentine, Italy, and Portugal were represented by Observers, as were FAO and ICES.

The International Whaling Statistics at Sandefjord presented the Commission with a record of the Antarctic whaling season 1956—57.

The Commission's Scientific Committee, by a majority vote, recommended a reduction in the Antarctic catch, which stood at 15,000 BWU's in 1955—56 and at 14,500 BWU's in 1956—57. The Commission decided, in view of all the economic and practical factors, that the limit should remain for another year at 14,500.

The Commission amended the Schedule to the Whaling Convention to distinguish between factory ships and refrigerated ships, so that the movements of the latter should not be restricted in the same way as factory ships, which are precluded from hunting whales in non-Antarctic waters for a period of one year after completing a season in the Antarctic.

With regard to the restricted catch of humpbacks, the Commission was unable to permit the extension of the 4-day season for humpback whaling, although there was some evidence that the stock of humpbacks was improving slightly. This was not the case with the stock of blue whales and the Commission was anxious to keep the blue whales under protection.

The representative of the USSR presented the Commission with details of experiments with rubber fenders, which can be used instead af dead whales.

The Commission again stressed its interest in marking, as being one of the most important methods of research on whale populations. Some of the important results of marking experiments have been brought to the attention of the Press.

To meet the increase in the Commission's expenses, the contributions of the Contracting Governments were raised from £ 150 to £ 200 a year.

The next annual meeting of the International Whaling Commission will be held in the Hague, Netherlands, on 23. June 1958, the Scientific Sub-Committee meeting as on previous occasions in the preceding March."

Agenda, Point 6 (a). Dr. TÅNING who had acted as Council's Observer at the meeting of ICNAF spoke as follows:—

"The International Council were invited by ICNAF to send an Observer to their annual meeting at Estoril, near Lisbon, Portugal, from 20. to 25. May this year. The meeting was preceded by a meeting of the Commission's Standing Committee on Research and Statistics on 17. and 18. May, and followed from 27. May to 3. June by a 'Joint Workshop' set up from ICNAF, FAO, and ICES on Population Dynamics and Selectivity of Fishing Gear. Dr. LUCAS, Chairman of the Council's Comparative Fishing Committee, is later describing the most important results obtained from this Joint Workshop, of which he was one of the Conveners. 53 Commissioners, Advisers, and Experts from the 10 member countries were present, and in addition about 20 Observers were present from the Federal Republic of Germany, the USSR, the FAO, the International Fisheries Convention of 1946, the International North Pacific Fisheries Commission, and from this Council.

The meeting was of exceptional interest, because this was the first occasion on which the Commission had met in Europe. This historic event emphasizes the evident desire of all nations bordering the North Atlantic to make the wisest possible use of the available fish stocks.

I wish to underline a few of the most important matters considered. As from this year Germany is a member of the Commission. It is particularly interesting that the Standing Committee on Research and Statistics were able to report that the beneficial effect of a $4^1/_2$" mesh limit on haddock in Subarea 5 closely conforms to expectation. The size of fish landed increased, the quantity of fish discarded at sea was negligible, and the 1952 year-class yielded 20—40% more than earlier year-classes at a comparable size.

This first attempt at management having been so successful, the Commision are now considering the question of applying regulations to other subareas and of further increasing the minimum mesh-size. The question of the use of chafing gear was discussed and certain recommendations made, but the question has yet to be studied in more detail.

The meeting approved several recommendations concerning the research work to be carried out and the standardization of methods already in use; plans were made for a manual of statistical methods for fishery workers to be published jointly by the Lowestoft Fisheries Laboratory and FAO; a 'workshop' on redfish systematics was suggested to be held in Copenhagen in October 1959.

Mr. K. SUNNANÅ, Norway, was elected Chairman for the next two years, and Mr. A. J. SUOMELA, USA, Vice-Chairman.

The next annual meeting will begin at Halifax on 9. June 1958."

Agenda, Point 6 (b). Dr. TÅNING then called upon Dr. LUCAS to report on the Conjoint Meeting of FAO, ICNAF, and ICES at Lisbon. Dr. LUCAS said:—

"In 1956 ICNAF invited representatives of FAO and the Comparative Fishing Committee of ICES to meet with its Research and Statistics Committee at Lisbon, immediately after the 1957 Annual General Commission Meeting there, for a conjoint discussion of several vital fishery problems. Dr. L. A. WALFORD, Dr. G. KESTEVEN, and Dr. C. E. LUCAS were appointed members of a Steering Committee to organize the meeting which took place as planned between 27. May and 3. June, inclusive.

There have been few occasions on which fishery scientists from so many countries in the western hemisphere have been able to come together to discuss special and common problems and the meeting was very well attended. There were 46 participants, from 21 countries or international bodies. Well over one-half presented contributions to the meeting, while there were many more from fishery workers who could not be present. In all, 90 papers were presented under the three headings of 'Gear Selectivity,' 'Fishing Effort Assessment', and 'Effects of Fishery' (Population dynamics).

While each of the organizations was concerned with a number of particular problems, many of these had several aspects in common and the Steering Committee arranged that ICNAF representatives therefore should be primarily responsible for a Working Party on 'selectivity' (Convener Mr. JOHN CLARK), the Fisheries Division of FAO for one on 'population dynamics' (Convener Mr. SIDNEY HOLT), and the Comparative Fishing Committee of ICES for one on 'effort assessment' (Convener Dr. LUCAS). The last subject was one of the first set before that committee by ICES, although the many others subsequently laid before it were borne in mind during the course of the meetings of the three Working Parties, and particularly in the preparation of the committee's report on the meeting to ICES.

There is the closest interrelationship between the subjects allocated to the three working parties, comprehensive data on selectivity and fishing effort being absolutely essential to the correct assessments of effects of fishing, population dynamics. Perhaps the closest interrelationship lay between effort assessment and population dynamics and the conveners of those two working parties therefore worked as closely in conjunction as possible and, in the end, they and their colleagues produced a joint report. The many aspects of selectivity discussed, and the diverse contributions received on that subject were necessarily more particular and diffuse, and the discussions of that working party were conducted separately throughout. But it is significant that several workers contributed both to that section and to one of the other two, while there was as much overlap in attendance at the discussions as the working of the meeting permitted. There were of course representatives of ICES at each working party and indeed the work conducted for many years under its auspices was generally acknowledged as contributing extensively to the foundations on which alone such conjoint discussions could usefully be based.

There will in due course be published accounts of the conjoint meeting, including the reports from the working parties and at least a considerable proportion of the contributions. Then two valuable papers have been prepared by FAO, having particularly in mind the significance of the Lisbon meeting for the Gear Congress at Hamburg and the meetings of the Indo-Pacific Fisheries Council; it is likely that these will be published in due course. Furthermore, the report commissioned by the Comparative Fishing Committee of ICES on the occasion of their special meeting held during the conjoint meeting at Lisbon is already available at the Central Office. This report particularly draws attention to contributions and discussions on topics which have been set by the Council before the Committee, and was prepared for the Committee by Messrs. PARRISH and BEVERTON.

Particularly in the field of population dynamics, the meetings were necessarily concerned greatly with theory, although practical information of considerable value was presented both under that heading and that of effort assessment. At the beginning of the meeting a list of 14 topics concerning one subject or the other, or both, was prepared and small groups of participants were asked to report on the present state of knowledge of these. Subsequently, in the report of the two working parties, these topics were reduced to nine major headings.

The first of these concerned the definition of concepts and terms used in fishing effort assessment and population dynamics. It is hoped that it will now be possible to secure world-wide acceptance of a list of definitions, as well as a standard system of notation; both would be invaluable in furthering international understanding and agreement.

Two other topics concerned the important subjects of assessing the effects of fishing in simple fisheries (i. e., those in which one fish is caught with one type of gear) and complex fisheries (i. e., those in which (a) several species are caught by one gear and (b) one species is caught by several gears, including the case in which several species are being caught by several types of gear). Particular problems concerned the estimation of effort and catch per unit effort in such circumstances and the associated yield assessments. It is hoped that more rapid progress will bee possible now that experts who have worked in many different types of fisheries have been able to pool their knowledge and experience and to suggest useful ways in which particular complex problems may be solved or investigated.

Two other groups had the task of reviewing the kinds of fishing effort data now available, and the manner of obtaining them, as well as the causes of

variation in both fishing effort and fishing mortality. The first received many effort measurements of value to the Council and proposed suitable standards for expressing fishing effort in trawl, seine, and line fisheries. The second, in addition to considering the components of variation which have most usually been recognized, drew attention to the important role of social and economic factors, as opposed to biological and environmental factors, in causing short-term or long-term variations in effort.

Another three groups were concerned with (a) types of variation in population parameters (density-dependent and density-independent variations, etc.), (b) studies of the effects of fishing in different circumstances and at different periods, and (c) methods of dealing with the unwieldy data of fishing effort and population dynamics, including the use of special computers, etc.

The last group was concerned with 'liaison' in the general sense, including training, collaboration, and dissemination of information. Emphasis was placed on (a) the great value of organized training courses, either international or national, during the present period of developing techniques in population dynamics, as well as (b) the progress which had already been made as a result of close co-operation between workers in different areas and subjects, and particularly between fishery biologists and mathematicians; it was strongly felt that progress could be further speeded through maintaining the closest co-operation between workers in different fields and particularly by collaboration with scientists of related disciplines such as fisheries technology and economics. Lastly, (c) the need was felt for a new publication of world-wide coverage which would receive contributions on any aspect of fishery dynamics and it was decided to set up a small group to ascertain for FAO what support such a publication might receive throughout the world. The views of representatives of the member nations of ICES have already been obtained. Meanwhile, the work of FAO in preparing an annotated bibliography of fisheries science was welcomed and FAO was further asked to assist in preparing and distributing a report on recent developments, including the results of the conjoint meeting, both for trade journals and, in appropriate form, for fishery workers in various countries with relevance to their particular requirements.

The relevance to the International Council of all the subjects mentioned above will be recognized, but it was perhaps in the field of selectivity that results of most immediate practical concern were to be found, many being relevant to the immediate programme of the Comparative Fishing Committee.

Here I will only briefly mention the major points:—

1. Additional data on selectivity in (a) manila and sisal trawls and (b) cotton and hemp trawls. In particular, the results confirmed that nets and/or cod-ends made of cotton and hemp provide generally higher selection factors than those made of manila or sisal.

2. A similar conclusion was reached after consideration of the contributions concerning selection factors for trawls made from synthetic fibres. Arrangements were made for all the information available on the essential properties of different materials to be presented to the Comparative Fishing Committee of ICES.

3. Other discussions concerned those factors other than mesh size and material which might be expected to affect selectivity, and it was recognized that these included (a) the rig of the net, (b) the size and composition of the catch, and (c) the towing speed and/or duration of tow. It was felt that much further work is needed, particularly on the first.

4. Once again attention was focused on the important subject of mesh measurement and the best means whereby measurements may be obtained simply and with sufficient accuracy by uniform methods, if at all possible, over the whole North Atlantic. A particular aspect of this concerned the most useful type of gauge to be used and the principles on which it should operate, and arrangements were made for a representative each of ICNAF and ICES (Mr. Medico and Professor von Brandt respectively) to review for these two bodies the various instruments now in use and their relative suitability, with a view to determining whether one or other might be accepted as suitable for all nations (a) for enforcement and/or (b) for research purposes; it was recognized that it might not be necessary to have identical instruments for these two purposes. In association, the selectivity working party carefully considered the various experimental techniques used in selectivity experiments.

5. The workshop did not discuss the light trawl problem as such, although a number of results had a bearing on the problem, particularly the accumulating information about the selectivity of synthetic fibres relative to those of cotton, hemp, manila, and sisal.

6. A further topic concerned the now considerable information concerning the apparently greater fishing power obtained by increasing cod-end mesh size.

7. Other discussions of relevance concerned the information gradually being obtained about selectivity in gill-nets and with fish hooks. Again, much more information is required.

8. Finally, the Council will wish to know that the Selectivity Workshop considered means whereby the rapidly increasing evidence on selectivity can be brought together and then disseminated to workers in the various fields. It was proposed that the way in which a scheme might most suitably be operated should be worked out by a panel of experts drawn from ICES, FAO, and ICNAF.

Looking back on the meeting as a whole, perhaps the most important results of all were (a) the evident value for the individual fisheries scientist of being able to meet and discuss his problems with workers from other countries and in different fisheries, as well as (b) the relatively speedy progress which can

be made once such contacts have been established. A special instance of this was the opportunity provided by this meeting for the Comparative Fishing Committee of ICES and the Research and Statistics Committee of ICNAF to meet together specially to consider problems of common interest. These were (a) the question of using a uniform method of mesh measurement over the whole North Atlantic, (b) standardization of methods of measuring fish which should be discussed at this meeting, and (c) the developing practice of using 'top' covers on trawl cod-ends. On the last, while it was generally recognized that at the moment circumstances may demand permissive regulations for the use of such 'chafing gear', it was unanimously resolved to recommend ICES to co-operate with ICNAF in deploring in principle the use of such gear, which may tend to mask the escape of undersized fish from the trawl.

Scientists and all others concerned with fisheries problems should appreciate the initiative of ICNAF in organizing a meeting of such wide interest."

Agenda, Point 7. Dr. TÅNING asked Dr. BÖHNECKE to report on the International Geophysical Year. Dr. BÖHNECKE spoke as follows:—

"When, a few months ago, I received the request of the late President to give a report on the plans of the IGY it was natural that I would gladly follow this request. To-day we are faced by the fact that Professor SVERDRUP, who personally made every effort to encourage the participation of our members in the great work of the IGY, has left us for ever. We owe it to his memory to present this plenary meeting with a brief account of these plans in which Professor SVERDRUP as President of the ICES took a personal share.

If we look back into the history of the study of the Globe, we find that this International Geophysical Year had two forerunners, namely 1882/83 and 1932/33 the so-called Polar Years, during which observations were carried out in the Polar regions mainly in the fields of meteorology, geomagnetism, geography, and astronomy.

The advance of science, especially in the last decade, had led not only to new discoveries but had raised above all new questions and new problems of such importance to mankind that one nation alone was no longer in a position to tackle them. The only possibility of solving these problems was by international co-operation, as practised already by this Council for more than fifty years. It was therefore only natural that the world organization of sciences, ICSU (International Council of Scientific Unions)—one might compare it with a World Parliament of Sciences—was in favour of such plans.

A committee, CSAGI, was set up to prepare the way for international co-operation, and a general programme has now crystallized as a result of the meetings which have taken place since 1951. This programme, which has been discussed not only in scientific publications but also in the daily Press, represents one of the greatest scientific achievements which has ever been brought about by the voluntary co-operation of nations. It extends far into space, where it deals with the physics of the sun and its radiation, with the sun-spots, and with the ionosphere, to be reached by artificial satellites. The meteorologists will penetrate the different levels of the atmosphere with rockets and radio-sondes, and the problems presented by the solid earth—its structure and shape—will be studied by geodetic, magnetic, gravimetric, and seismic methods. Especial efforts in this respect are to be made in the Antarctic.

It is only natural that in so great an enterprise the Ocean is not forgotten. All branches of science connected with the sea in one way or another are represented in the afore-mentioned Committee (CSAGI) and a world-wide programme for them has been drawn up. Existing organizations, as for instance ICES and ICNAF have already promised their collaboration.

In the main programme for oceanography we can recognize two lines of work:—

The first is directed to a better understanding of the variations of sea level and their relations to other phenomena in the ocean and atmosphere. Both long- and short-period changes in sea level will be investigated, the one under the heading 'long waves', the other under that of 'mean sea level.' We in this Council have little to do with these questions at present, but they are mentioned here for the sake of completing the picture.

The second line taken by the programme is towards the clarification of the problem of the circulation of the ocean waters, both at the surface and in the depths of the sea. There are three main tasks, described as 'Deep Water Circulation', 'Multiple-ship Measurements', and 'Polar-Front Survey'.

The purpose of the work on 'Deep Water Circulation' is primarily to fill in the gaps in our knowledge of the physical, chemical, and biological conditions in the depths of the Pacific and Indian Oceans and to find out whether the conceptions developed some 30 years ago about the Atlantic Ocean by the 'Meteor' Expedition still hold good and conform with recent theoretical considerations. This programme will be implemented by about twenty ships which ten nations are providing.

The 'Multiple-ship Programme' will clear up fundamental questions on the dynamics of the great ocean currents, for instance, the Gulf Stream, the Kuroshio, and the Equatorial Counter-Current. It is intended that several research ships operating in a small area, shall make simultaneous current measurements near the surface and in the depths; they will also make observations on the change in density stratification over a period of time.

Although the Council itself has no share in these programmes, because of its regional interests, some of the member nations are taking part in the work. In so far as they are of general interest, they will be very useful to us in our own problems.

Last but not least, the programme for the 'Polar-

Front Survey' was formulated by ICES itself, under the sponsorship of CSAGI, and it has been favourably received by ICNAF. It covers in its present form the whole North Atlantic Ocean from Spitsbergen (Svalbard) to the latitude of the Azores, and a closely spaced network of sections and stations has been planned for the area. About ten nations, with approximately twenty research vessels, will take part. The synoptic observations will be made at least once in spring and once in summer, in the year of 1958, to provide data on the seasonal variations over a larger area than has hitherto been possible. The observations will also serve to show us the prevailing oceanographic and biological situation, from which we may be able to learn more about long-period changes in the heat and nutrient budgets. We shall in fact be continuing to some extent the research which HELLAND-HANSEN commenced several years ago in the North Atlantic Ocean and in the Norwegian Sea, when he investigated the variations of the Gulf Stream.

In particular, we hope that our observations will improve our knowledge of the bottom topography, especially that of the East Greenland Shelf and the Mid-Atlantic Ridge. We also hope to obtain more information about the circulation of the subsurface layers along the Polar Front and the northern edge of the Gulf Stream system, and also in the centre of the Atlantic Ocean, our knowledge of this region being very scanty. We trust that we may be able to contribute thereby to the study of the biology of the redfish which, as Dr. TÅNING suggested it in 1949, may be connected with the stratification of temperature. The provision of better data for studies of the problem of 'biological conditioning' is indeed one of the main objects of the programme.

Special attention is to be paid to the formation and renewal of the North Atlantic deep water, a problem which NANSEN discussed long ago, and to the formation of the sub-arctic bottom water, which flows from the Norwegian Sea across the ridges between the Faroes and Iceland and Greenland into the North Atlantic Ocean. Recent work has given us the impression that these cold water masses may have a powerful effect on life in the sea.

The customary physico-chemical observations of temperature, salinity, oxygen, and phosphate will of course be made by all ships, but some will also measure fluorescence, turbidity, and the biologically important factors such as albumen, seston, chlorophyll, and carbon, in connexion with observations on plankton, fish fry, bottom sediments, and bottom fauna. A similar programme has been drawn up for the North Pacific also.

The details of this programme are to be discussed at this year's meeting. Next year we hope to be able to tell you of the success of this great plan, and to present you with at least some of the results obtained."

The meeting terminated at 10.50 a. m.

Meeting of Delegates, First Session, followed immediately

Agenda, Points 8 and 9. Dr. TÅNING opened the proceedings and presented the estimated Statement of Accounts for 1956/1957.

Dr. TÅNING reminded the Delegates that at their last meeting they had asked the late President, Professor SVERDRUP, to seek an agreement with the Danish Government on the Status of the Council.

The late President had had some correspondence and discussion with the Director of the Danish Foreign Office, Mr. N. SVENNINGSEN, during the winter and spring. In a letter dated 29. June, Mr. SVENNINGSEN had asked the President to illustrate by means of hard facts the case for granting Council privileges and immunities. A detailed memorandum on finance, diplomatic relations, postal privileges, and prestige was accordingly drawn up and forwarded. Professor SVERDRUP furthermore proposed a meeting with Mr. SVENNINGSEN in late August or early September, and it had been his intention to submit a report of this meeting to all Senior Delegates.

No reply has as yet been received from Mr. SVENNINGSEN and it was thought that the untimely death of Professor SVERDRUP may have led to this delay.

The Bureau, having considered the matter, agreed that an answer should be called for and the further action to be taken by the Bureau must be decided in the light of this answer.

Agenda, Point 10. Dr. TÅNING reminded the Delegates of the decision taken last year that the election of the Bureau should be postponed until the last meeting of Delegates, and instead of the nomination of a small *ad hoc* Committee, Bureau members should leave the room while the Delegates formed themselves into a Committee to discuss the composition of the Bureau.

In order to give the Delegates an opportunity to discuss the matter the President vacated the chair in favour of the Chairman of the Consultative Committee, Mr. R. S. WIMPENNY.

Mr. WIMPENNY pointed out that there were three points to deal with:— (1) the nomination of the President, (2) the nomination of other members of the Bureau, and (3) the nomination of the First Vice-President. It was unanimously agreed that Dr. TÅNING should be proposed as President, Dr. FURNESTIN, Dr. LELOUP, and Mr. AGLEN as Vice-Presidents,

with Dr. FURNESTIN as First Vice-President, and Mr. G. ROLLEFSEN was unanimously chosen for the chair of the Bureau.

When the Bureau members had returned, Mr. WIMPENNY announced the Delegates' proposals.

Dr. TÅNING thanked the Delegates for their confidence and asked them to set up an *ad hoc* Committee to deal with the question of Council's Status.

Dr. WENT thought that three Delegates should be elected and proposed Professor KULLENBERG, Mr. WIMPENNY, and Mr. LIENESCH.

Mr. WIMPENNY thought that in order to legalize the Committee's constitution, as was very important, a member of the Bureau ought to be included in the *ad hoc* Committee and proposed Mr. ROLLEFSEN.

Professor KULLENBERG, owing to lack of time, expressed unwillingness to serve on this Committee and it was decided that the Committee should be elected at the Final Meeting of the Delegates.

The meeting terminated at 11.50 a. m.

Meeting of Delegates, Second Session, Tuesday, 8. October 1957, at 10.00 a. m.

Dr. TÅNING, having opened the meeting, reminded the Delegates of the formal election of the Bureau and asked them to consider also the *ad hoc* Committee to be set up to deal with the Council's Status. Dr. TÅNING asked the Chairman of the Consultative Committee, Mr. R. S. WIMPENNY, to take the chair and the members of the Bureau left the room.

Mr. WIMPENNY suggested the election *en bloc* of the members of the Bureau who had been nominated at the first meeting of the Delegates. This was carried with acclamation.

Mr. WIMPENNY reminded the Delegates that they had already discussed the composition of the *ad hoc* Committee, and asked if they would agree to the following:— Mr. G. ROLLEFSEN, Bureau's representative and Chairman, Mr. G. J. LIENESCH, and Dr. A. E. J. WENT. This was carried.

When the members of the Bureau returned Mr. WIMPENNY said that the Delegates had unanimously elected Dr. TÅNING as President, Dr. FURNESTIN as First Vice-President, and Dr. LELOUP, Mr. AGLEN, and Mr. ROLLEFSEN as Vice-Presidents, and that the members elected to the *ad hoc* Committee were as stated above.

Dr. TÅNING thanked the Delegates for their confidence and assured them that he would always try to do his duty to the Council.

Agenda, Point 11. The President referred to the recommendations transmitted from the Consultative Committee and endorsed by the Bureau, a list which had been distributed among the Delegates. The President drew special attention to the *ad hoc* Committee set up to deal with the re-organization of the committees; this consisted of Dr. WENT assisted by Mr. ROLLEFSEN and Dr. KORRINGA. He said that the Committee would consider the question and submit a report before the next Council Meeting.

The Herring Committee recommended that the Herring tagging experiment be continued, the funds being provided by the countries concerned. At the request of Professor CIEGLEWICZ, the Secretary General stated that the countries interested would be approached through the Danish Foreign Office and asked if they were willing to continue the scheme; the contribution asked for would in most cases be considerably lower than that estimated for this year's experiment.

Dr. FURNESTIN said that France intended to carry out marking operations on the "Sandettié" ground throughout November and extended an invitation to any experts who might be interested to come on board the "Président-Théodore-Tissier" and take part in the work.

Continuing, the President said that it had been agreed that the Council should publish all the papers presented at the Symposium on "Measurement of Primary Production in the Sea" at an estimated cost of kr. 30,000; it was hoped that a grant of $ 3,000 would be made by UNESCO towards the cost. It had also been agreed to publish contributions submitted to the Special Meeting of the Baltic-Belt Seas Committee and to the joint meeting of the Salmon and Trout and the Baltic-Belt Seas Committees; the cost would be about kr. 10,000.

The requirements of the Hydrographical Committee had been approved in principle but as the excess of expenditure over income was already rather heavy, it had been suggested that the matter should be left for re-consideration at the Bureau Meeting in May, when it was hoped that the financial situation would be better. This was agreed to.

The Salmon and Trout Committee had asked that a Symposium should be held before the Council Meeting next year, with Professor NIKOLSKY as Convener; it was hoped that an account of Canadian work might be given.

The recommendations were then adopted *en bloc* (see list of Resolutions below).

Agenda, Point 12. As no comments had been offered, the Administrative Report was adopted.

Agenda, Point 13. The President formally moved the approval of the audited Accounts for 1955/1956, and this was carried.

Agenda, Point 14. In presenting the Budget for 1957/1958, the President pointed out that an excess of kr. 21,000 of expenditure over income was

expected, and explained that this was due to rather heavy demands for printing in the coming year. The sum allocated for publications amounts to kr. 149,000. The excess would be drawn from the Capital Reserve Fund, which at present stood at about kr. 149,000.

The Estimates for 1957/1958 were adopted as presented.

Agenda, Point 15. The President informed the Council that as regards the *ex officio* members of the Finance Committee, he had nominated Mr. AGLEN as the member from the Bureau and proposed the election of Professor PICOTTI, Dr. HULT, and Professor CIEGLEWICZ. Agreed.

The President said that as Commander LUMBY was retiring this year it would not be possible for him to continue as Editor of the *Journal du Conseil*. The President wanted to take this opportunity to thank Commander LUMBY for his invaluable work during the many years he served as Editor of the Journal.

The Secretary General had agreed to edit the Journal for one year, with the assistance of Dr. HARDEN JONES, Lowestoft; it was hoped that Dr. HARDEN JONES would eventually take over the editorship entirely. The Secretary General was thanked, with acclamation.

Dr. FRASER was re-elected sole Editor of the Plankton Sheets.

The meeting terminated at 10.45 a. m.

General Assembly, Final Meeting, Tuesday, 8. October 1957, at 11.00 a. m.

Agenda, Point 17. The President opened the proceedings and announced that the following replies had been received to the telegrams dispatched at the inaugural meeting of the Assembly.

From His Majesty the King of Norway:—

"Je remercie sincèrement les Membres du Conseil International pour l'Exploration de la Mer de leur témoignage de sympathie.

OLAV R."

From His Majesty the King of Denmark:—

"Mes remerciements sincères pour votre aimable salutation.

FREDERIK R."

From Dr. K. A. ANDERSSON, Honorary President:—

"My heartfelt thanks and sincere wishes for a successful meeting.

K. A. ANDERSSON."

From Mr. A. T. A. DOBSON, Honorary President:—

"Sincere thanks.

A. T. A. DOBSON."

From Dr. A. RAMALHO:—

"Grateful thanks for very kind telegram and best wishes for yourself and ICES.

ALFREDO RAMALHO."

From His Excellency NILS LYSØ, Minister of Fisheries:—

"I am sending the International Council for the Exploration of the Sea my cordial greetings to the meeting and regret very much not being able to be present.

NILS LYSØ."

It was also proposed that a letter of congratulation be sent to Professor M. FONTAINE, who had been elected a Member of the Academy in France. This was agreed, with acclamation.

The President said: "Twelve days have passed since the first meeting in the Annual Assembly of the Council. A great deal of work has been done and according to the conversations I have had with many of those participating in the meeting I think it can be said that our labours have been fruitful. The meetings commenced this year on 27. September with the Symposium on 'Measurements of Primary Production in the Sea', where a valuable basis for future work in this field was established. The report of this meeting will without doubt be widely used as a text-book by future specialists in the subject.

In the numerous committee meetings which followed the inaugural meeting, more contributions have been presented than in any previous year and the number of participants is probably greater than at any time in the Council's history. This fact emphasizes to a certain extent the need for a re-organization of the Council's internal structure, so that the framework of the Council may be adjusted according to its development. Nevertheless, it is absolutely essential to proceed carefully and to avoid too radical changes which might have unexpected and adverse consequences.

Each of the committees has, in general, been able to derive interesting and valuable results from last year's investigations, and these have led to the formulation of proposals of practical interest to the fishing industry and to the presentation of facts and figures of importance to the Permanent Commission in their efforts to conserve the fish stocks in certain areas; in particular, the information provided for the elucidation of the problem of the herring in the North Sea may be mentioned. No participant has been able to attend all the meetings, but the various reports which will now be printed will make it

possible for everyone to find the information which specially interests him.

One thing, however, that I am going to do here and now, is to thank everyone of the participants for the efforts he has made during this conference to promote the good of the subject which we are trying to study as a co-operative body; in particular, I should like to stress the special contribution to the Council's work which many people have made, through a long series of years, either as chairman of committees or in other positions, and who are now retiring from office from one cause or another. These are:— Dr. A. RAMALHO, Commander J. R. LUMBY, Mr. R. S. WIMPENNY, Dr. A. E. J. WENT, Dr. J. HULT, and Dr. G. THORSON. All of us, I am sure, wish the new officers who replace them success in their work in the years to come, and I take the liberty of bidding them welcome. They are:— Dr. P. KORRINGA, Mr. JÓN JONSSÓN, Professor G. V. NIKOLSKY, Dr. H. VILELA, and Dr. A. E. J. WENT; Dr. WENT is taking over from Mr. WIMPENNY the chairmanship of the Consultative Committee. Finally, as all of you know, we have had the pleasure of welcoming Mr. G. ROLLEFSEN as a member of the Bureau."

The President briefly described the 1957/1958 Estimates which have been accepted by the Council and pointed out that expenditure was expected to exceed income by about kr. 21,000, but he had been informed by Professor PICOTTI that a misunderstanding had occurred over Italy's annual contribution; Italy intended to pay kr. 20,000 a year and this would reduce the deficit by kr. 10,000.

Agenda, Point 18. The President summarized the resolutions adopted by the Council on the recommendations of the Consultative Committee.

Agenda, Point 19. The President announced that the next Council Meeting would be held in Copenhagen and would begin on Monday, 29. September 1958.

Agenda, Point 20. The President called for a hearty vote of thanks to the Norwegian Government, represented by Fisheries Director KLAUS SUNNANÅ, to the Town of Bergen, to the Bergen Association of Commerce, to the Norwegian Herring Sales Organization, and to the Norwegian Stockfish Exporters Association for all the help and hospitality which had been so generously provided during the meeting at Bergen. The President also expressed gratitude to the Harbour Authorities of Bergen for the facilities offered to the several research vessels visiting Bergen on this occasion.

The President then said: "We have had an opportunity during our sojourn here to see the splendid new research vessel 'Johan Hjort' and we have heard of the great service that the Norwegian research vessels have rendered the fishing industry and the Council has also been praised in this connexion. I will therefore ask Mr. ROLLEFSEN to accept for the 'Johan Hjort' this pennant of the International Council in token of our admiration of Norwegian marine research work."

The President also expressed the hope that the guests and observers present had enjoyed taking part in the Council's work.

Dr. L. A. WALFORD, who was present as Observer from the United States of America, then addressed a vote of thanks to the meeting and to the Norwegians for their hospitality.

A letter, received from Mr. SIDNEY HOLT, Food and Agriculture Organization of the United Nations, was read to the meeting by the President.

On behalf of the Soviet Delegation, Professor N. A. DMITRIEV expressed sincere thanks for the success of the meeting and extended an invitation to the Council to hold its 48th Annual Meeting in 1960 in the Soviet Union.

The President thanked Professor DMITRIEV for his kind invitation and said that it would be considered at the Council Meeting in 1959.

Fisheries Director, Mr. SUNNANÅ, expressed his great pleasure in having had the meeting at Bergen.

The meeting terminated at 11.45 a. m.

Resolutions passed by the 45th Statutory Meeting, 1957

Organization

C. Res. 1957/1:

It was agreed to set up a small *ad hoc* Committee consisting of Dr. WENT, assisted by Mr. ROLLEFSEN and Dr. KORRINGA, to look further into the question of rearrangement of committees. The *ad hoc* Committee should prepare a report to be sent to the Secretariat not later than a month in advance of the next Council Meeting at which the matter should again be discussed and brought before the Consultative Committee for consideration at its final meeting.

Publications

C. Res. 1957/2:

(a) It was agreed that the papers presented at the Symposium on "Measurements of Primary Production in the Sea" should be published by ICES. It was stressed that the nature of the subject considered called for early publication. It was hoped that UNESCO would grant a sum of $ 3,000 towards printing the papers presented. The cost was estimated at about kr. 30,000.

(b) It was agreed that the papers submitted to the Special Meeting of the Baltic-Belt Seas Committee to discuss "Measures for Improving the Stock of Demersal Fish in the Baltic", together with the papers presented at the joint meeting of the Salmon and Trout and the Baltic-Belt Seas Committees should be printed in the series *Rapports et Procès-Verbaux*. The cost of printing would amount to about kr. 10,000.

(c) It was decided that the statistics on the whiting in the North Sea, collected last year, together with the report by Dr. Aage J. C. JENSEN, submitted this year, should be published in a number of the *Statistical News Letters*.

(d) The importance of the request from the Liaison Committee for prompt publication of length and age data for all protective species was recognized, and it was agreed that the Secretariat should undertake the collection of these data for protected species and the herring from member countries with a view to their being published promptly and regularly in the *Statistical News Letters*.

(e) It was agreed that ICES should urge all countries to collect data and report on the quantities of protected species rejected at sea. This information is of great importance to the Permanent Commission and tables dealing with it should be compiled and published in the *Statistical News Letters*.

Action for the Bureau

C. Res. 1957/3:

(a) It was resolved that the Council should request the Danish Foreign Office to promote a meeting consisting of the fully accredited representatives of the Governments concerned including those of fishing administrations, research institutions, and fishermen's organizations of all ICES' Baltic countries for the purpose of discussing an international convention for the Baltic-Belt Seas incorporating the protective measures mentioned in Recommendation I of the Baltic-Belt Seas Committee. The meeting should be held at some convenient centre in one of the member countries.

(b) The Council approved that participating countries be asked to forward plans and specifications to Copenhagen of all types of successful fish passes operating in the respective countries and that these plans, etc. should be examined by a sub-committee of the Salmon and Trout Committee to ascertain if it would be possible or feasible to produce a handbook on fish passes.

Recommendation to FAO

C. Res. 1957/4:

The Plankton Committee and the Symposium wished to express the usefulness of the papers of the type presented by FAO at the Symposium. The Council hoped that FAO would find the possibility of publishing these contributions separately. The members of the Symposium expressed their willingness to assist in the final editing of these papers.

Records of Hydrographical Data

C. Res. 1957/5:

It was agreed in principle that the Council's index of hydrographic data be mechanized and that the IBM system be employed for the purpose. The estimated annual cost to the Council is kr. 8,300 with an additional charge of about kr. 2,000 in the first year. The Bureau would review the matter at their meeting in May 1958.

Special Meetings

C. Res. 1957/6:

It was decided to arrange a Symposium, called for by the Salmon and Trout Committee, on the Saturday and Sunday immediately preceding the opening meeting of ICES in 1958 and that the subject matters to be discussed should be:—

(i) the effectiveness of liberating fry, parr, or smolts of salmon and sea trout under different conditions, and

(ii) tags for salmon and trout and their relative effectiveness.

It was hoped that an account of Canadian work might be given at the Symposium.

Intermediate Meetings

C. Res. 1957/7:

(a) It was agreed that the funds (kr. 2,500) allocated for a meeting of the Sub-Committee on the Preparation of Mean Charts in the financial year 1956/1957, but not used in that year, should be made available for a meeting in Hamburg or Copenhagen as necessary early in the coming financial year.

(b) In accordance with C. Res. 1957/5 it was agreed in principle that provision be made for a meeting to be held of the Sub-Committee on the Mechanization of the Hydrographic Data Index. The cost is estimated to about kr. 3,000.

Status of ICES

C. Res. 1957/8:

It was resolved to set up an *ad hoc* Committee to follow up the question of ICES' Status. As members were elected;— Mr. G. Rollefsen, as the Bureau representative, to act as Chairman, and Dr. A. E. J. Went and Mr. G. J. Lienesch.

International Herring Tagging Programme

C. Res. 1957/9:

(a) It was decided to approach the countries interested through the Danish Foreign Office requesting that funds be made available as before for continuing the tagging experiment.

(b) For working up the results, etc. in Copenhagen, it was decided to approach Mr. Gulland (Lowestoft), Mr. Andersen (Copenhagen), and Mr. Aasen. This group is requested to report to the Working Group as soon as possible. The Working Group is requested to arrange the details of next year's marking programme on the basis of this report.

Standard Notation

C. Res. 1957/10:

It was agreed that the proposals as now amended, made at the conjoint meeting of FAO, ICNAF, and ICES in Lisbon, on the standard notation for mathematical symbols in the fields of fisheries population dynamics, should be adopted by ICES members.

Other Recommendations

C. Res. 1957/11:

Near Northern Seas Committee:

The Near Northern Seas Committee recommends that further research ship work be carried out with a view to investigating the stocks of whiting, and that this work be co-ordinated between the nations involved.

Comparative Fishing Committee:

1. It was decided that in view of the potential danger that 'chafing' gear on the upper sides of cod-ends may hinder the escape af small fish, ICES should urge all countries concerned to study the modes of action of 'chafing' gear of all kinds, so as to determine their effects on escapement and if possible to develop substitutes which should avoid risks.

2. (a) It was recommended by the Comparative Fishing Committee that members of ICES be urged, as is now the practice of ICNAF members, to measure fish lengths to the nearest centimetre or, if that is impracticable, to report their data in those terms, and

(b) that ICNAF be informed that at present only in one ICES country are fish commonly measured according to fork length; so that it is not possible to recommend members to adopt that method. It is urged, however, that workers should always record the methods used by them in measuring fish, and that they should pay particular attention to the accuracy of their measurements, especially with regard to the differences between the lengths of the fish before death and *post mortem* lengths.

3. It was agreed that ICES members be urged to record, in relation to the mesh experiments, full particulars regarding the nature and characteristics of twine used.

4. It was recommended that the scope of the work of the Comparative Fishing Committee be recognized as including studies of the effects of fishing.

Herring Committee:

The Antarctic Transplantation Scheme. The Herring Committee would be very interested in investigations relating to transplantation of herring to the Antarctic, but the majority of the member countries will not be able to participate.

Budget for the Financial Year 1/11 1957–31/10 1958

EXPENDITURE

	D. Kr.	D. Kr.
I. Incidentals		
1. President	5,000.00	
2. Chairmen of Committees	22,500.00	
		27,500.00
II. Salaries		
1. General Secretary	23,449.00	
Administrative Department:—		
2. Assistant Secretary	15,602.00	
3. Assistant	11,810.00	
Publication Department:—		
4. Assistant Secretary	15,602.00	
5. Assistant	10,730.00	
Preparation of Card-Index	1,200.00	
Statistical Department:—		
6. Assistant Secretary	14,981.00	
Hydrographical Department:—		
7. Hydrographer	23,096.00	
8. 1st Assistant	14,376.00	
9. Clerical Assistance	9,460.00	
10. Part-Time Assist. (P. Alnøe)	6,000.00	
11. Part-Time Assist. (I. Bondorff)	5,000.00	
Incidental assistance	10,000.00	
		161,306.00
III. Office Expenses		45,200.00
IV. Travelling Expenses		19,000.00
V. Publications		149,000.00
VI. Pensions[1])		36,658.00
		438,664.00

RECEIPT

	D. Kr.	D. Kr.
I. Contributions		
Belgium	20,000.00	
Denmark	20,000.00	
Finland	10,000.00	
France	40,000.00	
German Federal Republic	40,000.00	
Iceland	20,000.00	
Ireland	15,000.00	
Italy	20,000.00	
The Netherlands	20,000.00	
Norway	20,000.00	
Poland	20,000.00	
Portugal	15,000.00	
Spain	20,000.00	
Sweden	20,000.00	
United Kingdom	40,000.00	
U.S.S.R.	40,000.00	
		380,000.00
II. Interest		
On Bank Deposits	10,000.00	
On Investments	4,644.00	
On Pension Fund	4,873.50	
		19,517.50
III. Sale of Publications		27,000.00
IV. Contributions		
from the Woods Hole Oceanographic Institution and from the A. and M. College of Texas towards collecting and publishing American observations in the *Bulletin Hydrographique*		1,000.00
Estimated Excess of Expenditure over Income		11,146.50
		438,664.00

[1]) The difference between the amount of pensions and the sum of interest yielded by the Pension Fund will be paid as a subvention to the persons concerned.

List of Members of Committees

(One member only, from each country is entitled to vote)

Consultative Committee

Dr. A. E. J. WENT, Chairman,
Dr. P. KORRINGA,
Mr. JÓN JÓNSSON,
Dr. AA. J. C. JENSEN,
Dr. J. FURNESTIN,
Dr. C. E. LUCAS,
Mr. G. ROLLEFSEN,
Mr. OLAV AASEN,
Dr. JUAN CUESTA,
Dr. H. VILELA,
Prof. G. V. NIKOLSKY,
Dr. H. A. COLE,
Dr. G. BÖHNECKE,
Prof. E. STEEMANN NIELSEN,
Dr. J. LUNDBECK,
Dr. N. A. MACKINTOSH.

Editorial Committee

The Chairman of the Consultative Committee, the Editor of the *Journal du Conseil*, and the Secretary General

Distant Northern Seas Committee

Belgium:	Mr. CH. GILIS,
Denmark:	Dr. PAUL M. HANSEN,
	Dr. E. BERTELSEN,
England:	Mr. R. J.H. BEVERTON,
	Mr. A. J. LEE,
Finland:	Dr. I. HELA,
France:	Dr. J. ANCELLIN,
	Mr. CL. NÉDÉLEC,
Germany:	Dr. U. SCHMIDT,
	Dr. A. KOTTHAUS,
Iceland:	**Mr. JÓN JÓNSSON, Chairman,**
	Mr. JAKOB MAGNÚSSON,
Ireland:	Dr. A. E. J. WENT,
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	Mr. A. N. Svetovidov,
	Mr. M. N. Lishev.

Hydrographical Consultant: Dr. J. B. Tait. Plankton Consultants: Dr. J. H. Fraser and Prof. T. Braarud.

Sardine Committee

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Sub-Committee on the Preparation of Mean Charts of the Salinity and Temperature of the Surface Layer

Prof. G. DIETRICH, Chairman,
Mr. H. W. Hill,
Prof. P. Groen,
Mr. Jens Smed.

Sub-Committee on the International Geophysical Year 1957—1958

Dr. G. BÖHNECKE, Chairman,
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Mr. A. Gougenheim,
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Mr. H. Thomsen,
Mr. V. A. Lednev,
Dr. Å. V. Tåning.

Sub-Committee for the Investigation of Sub-Arctic Deep-Water Overflow across the Iceland-Faroe Ridge

Dr. J. B. TAIT, Chairman,
Prof. G. Dietrich,
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Sub-Committee for Mechanizing the Index of Hydrographic Data held by the Council

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Sub-Committee for Considering Standard Methods for Salinity Determination

Mr. F. HERMANN, Chairman,
Dr. K. Kalle,
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Sub-Committee on the Co-ordination of Hydrographic Investigations in the Baltic

Prof. I. HELA, Chairman,
Prof. J. Krey,
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Liaison Committee

in Connexion with the Permanent Commission of the 1946 Fisheries Convention

The Chairman of the Consultative Committee, Chairman,
the Chairman of the Distant Northern Seas Committee,
the Chairman of the Near Northern Seas Committee,
the Chairman of the Atlantic Committee,
the Chairman of the Comparative Fishing Committee, and
the Chairman of the Gadoid Fish Committee.

Co-opted members for 1957/58:

Mr. R. J. H. Beverton,
Dr. A. von Brandt,
Mr. L. K. Boerema.

List of Editors

Rapports et Procès-Verbaux	**The Secretary General**
Annales Biologiques	**„**
Bulletin Statistique	**„**
Statistical News Letters	**„**
Journal du Conseil	**The Secretary General with the assistance of Dr. F. R. HARDEN JONES**
Bulletin Hydrographique	**The Hydrographer**
Fiches d'Identification du Zooplancton	**Dr. J. H. FRASER**

ENGLISH VERSION

Symposium on the Measurement of Primary Production in the Sea

Convener: Prof. E. Steemann Nielsen; Reporter: Dr. D. H. Cushing

The following papers were read and discussed:—

Berge, Grim: "The primary production in the Norwegian Sea in June 1954, measured by an adapted ^{14}C technique".

Bernard, F.: "Données récentes sur la fertilité élémentaire en Méditerranée."

Bogorov, B. G : "Estimates of primary production in biogeographical regionization of the ocean".

Braarud, T.: "Counting methods for determination of the standing crop of phytoplankton".

Cooper, L. H. N.: "Consumption of nutrient salts in the English Channel as a means of measuring production".

Corlett, J.: "Measurements of primary production in the western Barents Sea".

Currie, R. I.: "Some observations on organic production in the north-east Atlantic".

Cushing, D. H.: "The estimation of carbon in phytoplankton".

Cushing, D. H.: "Some experiments using the ^{14}C technique".

Cushing, D. H.: "The effect of grazing in reducing the primary production: a review".

Cushing, D. H., & Nicholson, H. F.: "The measurement of carbon content of diatoms, using the ^{14}C technique: a preliminary note".

*Davis, P. S.: "A method for the determination of chlorophyll in sea water".

Doty, M. S., & Oguri, M.: "Selected features of the isotopic carbon primary productivity technique".

Fedosov, M. V.: "Investigations of the chemical basis of productivity in sea basins".

Fogg, G. E.: "Extracellular products of phytoplankton and the estimation of primary production".

Hanaoka, T.: "Suspended matter as an index of the productivity of the sea".

Holmes, R. W.: "Surface chlorophyll 'A', surface primary production, and zooplankton volumes in the eastern Pacific Ocean".

*Jitts, H. R.: "The ^{14}C method for measuring CO_2 uptake in marine productivity studies".

Ketchum, Bostwick H., *et al.*: "Productivity in relation to nutrients".

Krey J.: "Chemical methods of estimating standing crop of phytoplankton".

*Laevastu, T.: "Review of the methods used in plankton research and conversion tables for recording the data and recommendations for standardization".

*Laevastu, T.: "Zooplankton. Considered in relation to phytoplankton and thus a factor affecting basic production and fisheries".

Lucas, C. E.: "External metabolites and productivity".

Ohle, W.: "Diurnal production and destruction rates of phytoplankton in lakes".

Rodhe, W.: "The primary production in lakes: some results and restrictions of the ^{14}C method".

Steemann Nielsen, E.: "Light and the organic production in the sea".

Steemann Nielsen, E.: "Experimental methods for measuring organic production in the sea".

Steemann Nielsen, E.: "A survey of recent Danish measurements of the organic productivity in the sea".

Wimpenny, R. S.: "Carbon production in the sea at the Smith's Knoll lightvessel".

Winberg, G. G.: "Quelques questions concernant les méthodes de l'investigation de la production primaire du plancton, basée sur les travaux exécutés en URSS".

These papers, except those marked with an asterisk, have been published in the series *Rapports et Procès-Verbaux*, Vol. 144.

Special Scientific Meeting on Measures for Improving the Stock of Demersal Fish in the Baltic

Convener: Prof. W. Cieglewicz; Reporter: Dr. Aage J. C. Jensen

The following papers were read:—

Aage J. C. Jensen & O. Bagge: "Danish investigations on the stocks of cod, plaice, flounder, and dab in the central Baltic and the fishery for these species also in the western Baltic".

R. Kändler & Fr. Thurow: "On the stock of flatfish and cod and the yield of the German fishery in the Baltic".

Z. Mulicki: "The state of the stock of flatfishes in the Baltic".

S. Rutkowicz: "The state of the cod stock in the southern Baltic as reflected by the Polish investigations 1946—1956".

W. Cieglewicz & W. Strzyzewski: "Selection of Baltic cod by cod-end of different materials".

Sven Sahlin: "The yield of the Swedish fishery in the Baltic during 1915—1955".

G. Otterlind: "Swedish cod investigations in the Baltic".

G. Otterlind & G. Sellerberg: "Some notes on Swedish trawl experiments in the Southern Baltic".

T. F. Dementjeva: "Some data on the life-history and fishery of the cod in the central Baltic".

K. Zemskaja: "Short characteristics of the fishing stock of *Pleuronectes flesus* in the central Baltic".

On the basis of the papers it was discussed if protective measures were necessary and what would be the best measures for protection of the stocks. The Baltic-Belt Seas Committee was asked to adopt the recommendation proposed (see Rec. I of the report of the Baltic-Belt Seas Committee).

These papers, except the one by Otterlind and Sellerberg, will be published, together with the papers submitted to the joint meeting of the Baltic-Belt Seas and the Salmon and Trout Committees in a volume of the series *Rapports et Procès-Verbaux*.

Report and Recommendations of the Consultative Committee

Chairman: Mr. R. S. Wimpenny

I. Proceedings

1. At the first session the Chairman informed the members that this year it had been neccessary to hold three sessions of the Committee. This was due to the fact that several members had to attend the FAO Gear Congress in Hamburg which started on 7. October, so much of the normal final business would have to be transacted at the second session which would be the most important one.

2. Programme of Proceedings.

Some changes and additions were made to the committee schedules; a general claim for more time was put forward as so many papers had to be dealt with in most committees. A combined meeting of the Salmon and Trout and the Baltic-Belt Seas Committees was arranged and it was agreed to invite Professor Nikolsky to preside.

3. Matters for Consideration.

The Chairman drew attention to four questions to be considered by the committees, namely, (a) future committee structure; (b) recommendations of the co-opted members of the Liaison Committee concerning publication by the Council of length and age data of protective species and reporting of protected species rejected at sea; (c) standard mathematical notation for population dynamics; and (d) a standardized method of fish measurement.

4. Reports of Committees.

In the second session most of the reports were on the table, and in those cases where this was not possible the Chairman concerned gave a short verbal account of the proceedings and recommendations of his committee.

Professor Steemann Nielsen thanked the Council for having agreed to the Plankton Symposium. It had been a great success with specialists present from many parts of the world. He was aware that the recommendation on printing the papers presented at the Symposium would be fairly expensive but, on the other hand, the Council would be able to sell a substantial number of copies as there would possibly be a great demand for these papers. Recommendation 2 a was agreed.

The very comprehensive set of recommendations of the Baltic-Belt Seas Committee, concerning restrictive measures to be taken in that area, was accepted after a detailed discussion. Recommendation 3 was passed.

The recommendation for printing the papers submitted both to the Special Scientific Meeting and to the joint meeting of the Baltic-Belt Seas and the Salmon and Trout Committees was also passed (Rec. 2 b).

The recommendation of the Near Northern Seas Committee concerned publication of whiting stati-

stics, together with Dr. JENSEN's report submitted this year. It was unanimously agreed (Rec. 2 e).

Dr. HULT, who had resigned his chairmanship, was given an acclamation by the Committee for his able conduct of the meetings.

Mr. AASEN, the Chairman of the Herring Committee, outlined Recommendation 5 of his committee concerning the continuation of the international large-scale tagging experiment in the North Sea which began as a result of last year's meeting. In order to have a good idea of the plan of working two experts on population dynamics, Mr. GULLAND and Mr. K. P. ANDERSEN, should sit in with Mr. AASEN and examine the data they already had obtained and plan and formulate the tagging work that would provide the best returns. After a discussion about the funds for these purposes it was agreed to adopt the recommendation and refer the question of funds to the Bureau (Rec. 4).

Dr. WENT emphasized the unanimous decision of the Salmon and Trout Committee to be permitted to produce an administrative report where all the work on salmon and trout should be included, if necessary, with cross-references to Baltic salmon. He furthermore outlined Recommendation 1, that member countries should forward plans and specifications on successful fish passes operating in their country with a view to producing a handbook on fish passes. A sub-committee should be established at the next Council meeting for examination of this question.

In explaining the plans about holding a Symposium next year Dr. WENT informed the members that during the discussions of the Salmon and Trout Committee a number of points were raised on which a large number of people had information of very great importance which had never been published. Recommendation 5 was agreed.

Dr. COLE gave an account of the meeting of the Shellfish Committee; a large number of papers had been presented and no less than five recommendations had been agreed, three of which related to schemes of work. Recommendation 3 of the committee referring to the desirability of studying the stocks of *Nephrops* which, according to the committee were being injudiciously exploited, provoked a short discussion.

Dr. COLE explained in detail about Recommendation 5; it had arisen from consideration of Dr. BÜCKMANN's memorandum about committee arrangement and it had been suggested that the concept of making an annual statement of the biological situation was somewhat out of date and it was agreed to recommend the discontinuance of the *Annales Biologiques*. This point could not be decided in this meeting, and the Chairman of the Consultative Committee suggested it should be put on the agenda next year so as to go through all the committees and be considered at the final meeting of the Committee.

The Distant Northern Seas Committee had no recommendations but it was intended to prepare a meeting on the taxonomy of redfish to be held in co-operation with ICNAF in the autumn of 1959. The Chairman proposed a vote of thanks to Dr. TÅNING for his long chairmanship and congratulated him for having been nominated to the highest post in the Council, President.

Dr. LUCAS gave an account of the recommendations of the Comparative Fishing Committee which were all initiated by the Lisbon meeting and by the problems laid before the committee by the Liaison Committee.

Dr. BÖHNECKE explained about the very substantial sum of money required in the recommendations of the Hydrographical Committee. In view of the fact that the increasing number of hydrographical observations, at present 50,000 sets per year, was very difficult to handle in the same manner as before (writing the cards by hand, etc.) the committee seriously considered the proposal to mechanize the data index as, for instance, the meteorologists had been doing for a long time. A sub-committee had been established for the purpose of finding the best ways and means for the mechanization and a sum of kr. 3,000 was requested for a meeting of this sub-committee to take place next year. The BT data would also be included in the mechanization. A report by Mr. HERMANN about the standardization of salinity determination had been much appreciated by the committee and, as it could be used as a manual for studies of new methods, a proposal of printing it had been put forward. Recommendations 6 and 7 were adopted.

Dr. CUESTA underlined that the central aim of the Sardine Committee would be the study of the mortality of pelagic sardine eggs.

5. Future Committee Structure.

The documents submitted in respect of this question were again on the table. The opinions of the members were so varied that, after the matter had been carefully discussed, it was decided that at present it was impossible to reach a solution which was acceptable to all, and Recommendation 1 was agreed.

6. Recommendations of the co-opted Members of the Liaison Committee.

These recommendations had been considered in all the committees. The Gadoid Fish, the Herring, and the Statistical Committees had adopted recommendations about them, and the Comparative Fishing Committee had furthermore endorsed the recommendation of the Statistical Committee. The Chairman pointed out that the publication of length and age data of protective species and on the quantity of protected fish rejected at sea would involve the Secretariat and, in particular, the Secretary General in making inquiries of all the nations and in trying to collate the material. It was briefly discussed in which of the Council's series this information should be published and whether it should be a single or a serial publication. Recommendations 2 c and d were unanimously agreed after having been proposed by Dr. WENT and seconded by Dr. LUCAS.

7. Mathematical Notation for Population Dynamics.

The Chairman called attention to the paper submitted to the members at the first meeting of the Committee. It came from the Lisbon meeting pointing out the desirability of standardizing mathematical notations. In the field of population dynamics —a very complicated arithmetic art which had come to biology in recent years—it would make things less difficult if people working with these problems could use the same symbols. Recommendation 9 was agreed.

8. Standardization of Methods of Fish Measurement.

In the Comparative Fishing Committee there had been a substantial discussion on this question which had led to a recommendation. With a view to conforming with ICNAF, where fish are measured to a dimension called fork length, a discussion took place on how measurements were carried out in the different countries and it transpired that only in one of ICES countries was fork length commonly used. After a discussion in the Committee of technicalities of measurement it was decided to ask the Secretariat to produce a list of references to recommendations concerning standard methods of measurements passed by the Council and consider the matter again next year.

9. Election of Chairman.

Mr. Wimpenny informed the members that his 5-year term of office ended this year and thanking members for the support they had given him asked them to nominate a new chairman.

Dr. Went was unanimously elected Chairman.

II. Recommendations

1. Arrangement of Committees

It was agreed to set up a small *ad hoc* Committee consisting of Dr. Went, assisted by Mr. Rollefsen and Dr. Korringa, to look further into this matter and prepare a report to be sent to the Secretariat not later than a month in advance of the next Council Meeting at which the matter should again be discussed and brought before the Consultative Committee for consideration at its final meeting.

2. Publications

(a) It was agreed that all papers and recommendations presented at the Symposium on Measurements of Primary Production in the Sea should be published by ICES. It was stressed that the nature of the subject considered called for early publication.[1])

(b) It was agreed that the papers submitted to the Special Meeting of the Baltic-Belt Seas Committee to discuss Measures for Improving the Stock of Demersal Fish in the Baltic, together with the papers presented at the joint meeting of the Salmon and Trout and the Baltic-Belt Seas Committees should be printed in the series *Rapports et Procès-Verbaux*. The cost of printing was estimated at about kr. 10,000.

(c) The importance of the request from the Liaison Committee for prompt publication of length and age data for all protective species was recognized, and it was recommended that the Secretariat should undertake the collection of these data and those of the herring from member countries with a view to their being published promptly and regularly in the *Statistical News Letters*.

(d) It was recommended that ICES should urge all countries to collect data and report on the quantities of protected species rejected at sea. This information is of great importance to the Permanent Commission and tables dealing with it should be compiled and published in the *Statistical News Letters*.

(e) It was decided that the statistics on the whiting in the North Sea, collected last year, together with the report by Dr. Aa. J. C. Jensen, submitted this year, should be published in a number of the *Statistical News Letters*.[2])

3. Action for the Bureau

In accordance with Recommendation 1 of the Baltic-Belt Seas Committee it was resolved that the Council should request the Danish Foreign Office to arrange a meeting of representatives of fishing administrations, research institutions, and fishermen's organizations of all Baltic Countries for the purpose of discussing an International Convention for the Baltic-Belt Seas incorporating the measures mentioned in that recommendation. The meeting should be held at some convenient centre in one of the member countries.

4. International Herring Tagging Programme

(a) It was agreed to adopt Recommendation 5 of the Herring Committee requesting that funds be made available as before for continuing the tagging experiment.

(b) For working up the results in Copenhagen it was decided to approach Mr. Gulland, Mr. K. P. Andersen, and Mr. Aasen. This group is requested to report to the Working Group as soon as possible. The Working Group is requested to arrange the details of next year's tagging programme on the basis of this report.

5. Special Meeting

It was decided to arrange a Symposium, called for by the Salmon and Trout Committee, on the Saturday or Sunday immediately preceding the opening meeting of ICES in 1958 and that the subject matters to be discussed should be:—

(i) the effectiveness of liberating fry, parr, or smolts of salmon and sea trout under different conditions, and

[1]) The papers have appeared in April 1958 in Vol. **144** of Rapp. et Proc.-Verb.

[2]) Appeared in April 1958 as No. 3.

(ii) tags for salmon and trout and their relative effectiveness.

It was hoped that an account of Canadian work might be given at the Symposium.

6. Records of Hydrographical Data

It was recommended that the Council's index of hydrographic data be mechanized and that the IBM system be employed for the purpose. The estimated annual cost to the Council is 8,300 kr., with an additional charge of about 2,000 kr. in the first year.

7. Intermediate Meetings

(a) It was recommended that the funds (kr. 2,500) allocated for the meeting of the Sub-Committee on the Preparation of Mean Charts in the financial year 1956/57, but not used in that year, should be made available for a meeting in Hamburg or Copenhagen as necessary early in the coming financial year.

(b) It was resolved that provision be made for a meeting to be held of the Sub-Committee on the Mechanization of the Hydrographic Data Index. The cost is estimated at about kr. 3,000.

8. Standard Notation for Population Dynamics

It was agreed that the proposals made at the joint meeting of FAO, ICNAF, and ICES in Lisbon on a standard notation for mathematical symbols in the field of fisheries population dynamics should be adopted by the member countries of ICES.

Reports and Programmes of Committees

Distant Northern Seas Committee

Chairman: Dr. Å. Vedel Tåning

I. Proceedings

The Chairman welcomed the members and guests. All countries were represented except Finland, Netherlands, and Ireland. As new representatives Germany appointed Dr. A. Kotthaus, and Iceland Dr. Magnússon.

The Administrative Report and the *Annales Biologiques* were adopted. A general discussion on several questions relating to the work in the area took place.

The Committee considered three matters forwarded to it by the Chairman of the Consultative Committee:

1. Arrangement of Committees. This question was stressed so that everybody present was well acquainted with Dr. Went's report, and accordingly could forward further proposals to the Chairman of the Consultative Committee.
2. The recommendation of the Liaison Committee that fish measurements and information on fish rejected at sea should be published by the Council; the Committee agreed to this recommendation of the Liaison Committee.
3. The standards of mathematical notation, as recommended by the Lisbon meeting was brought to the knowledge of the members of the Committee.

The work on research (*Sebastes*) was discussed at some length, and it was recommended that the interested experts already now should begin to prepare contributions, especially on the taxonomy of the group, with a view to contribute to the meeting announced by ICNAF in the autumn of 1959 with Prof. J. Lundbeck as Convener. A small *ad hoc* Committee of *Sebastes* experts were asked to outline the questions requiring immediate action of those who are working on the problems of taxonomy, distribution, and age assessment of this important food fish.

Mr. Jón Jónsson of Iceland was elected Chairman for the coming year.

II. Communications

The following reports were submitted to the Committee and discussed; the authors of the communications marked with an asterisk were not present, and questions relating to these reports from some of the members could accordingly not be elucidated.

*A. S. Baranenkova: "Some information of the distribution of *Sebastes*".

J. Magnússon: "Some notes on the sex composition of catches of redfish in Icelandic and East Greenland waters".

A. Kotthaus: "Remarks on the race question in redfish studies". (With slides.)

*V. I. Travin: "Size and age composition of redfish in some areas of the North Atlantic in 1956".

*T. S. Rass: "Biogeographical fishery complexes of the Atlantic and Pacific Oceans and their comparison".

I. Hela: "Statement on the cruise of R/V 'Aranda' July 1957 in the Barents Sea and north of Spitsbergen".

III. Programme of Work

The work at sea already prepared by some countries was reviewed. Several countries could not yet present programmes of their cruises in the area. These programmes would, however, be circulated by the Central Office at the beginning of January 1958.

Denmark: The "Dana" will carry out a cruise in the Faroe, East Greenland, and West Greenland waters from late May until late August. The M/C "Adolf Jensen" and "Immanuel" will operate in West Greenland coastal waters during most of the year.

England: Ships programme as in 1957, but programme will appear later on.

France: Programme as in 1957.

Germany: Detailed programme will appear later.

Iceland: The R/V "Ægir" and "María Júlía" will operate as in 1957 with assistance of chartered trawlers, especially on redfish investigations.

Norway: The research vessels "G. O. Sars" and "Johan Hjort" will be in action the whole year, assisted by chartered vessels. The programme will appear at a later date.

Scotland: The "Explorer" will continue work in Faroe-Iceland-East Greenland waters as in 1957, but a detailed programme will appear later.

USSR: The work at sea will be continued in the Norwegian Sea, Barents Sea, etc. as previously.

Meeting of Redfish Experts of the Distant Northern Seas Committee

At the meeting of the Distant Northern Seas Committee on Thursday 3. October 1957, it was suggested by Mr. WIMPENNY that the redfish experts connected with the ICES should hold a meeting to discuss various problems concerning redfish investigations. The Chairman asked Dr. MAGNÚSSON to organize such a meeting. It was held on the following day. Dr. KOTTHAUS, Dr. LAGUNOV, Mr. BRATBERG, Dr. B. RASMUSSEN, Dr. TÅNING, and Dr. MAGNÚSSON were present. Dr. LUNDBECK and Dr. WALFORD were also present as ICNAF representatives.

Dr. WALFORD informed those present of an ICNAF Symposium on Redfish Race Problems to be held in Copenhagen, October 1959. It was agreed that the symposium should be held in Copenhagen in order to take advantage of the unparalleled collection of *Sebastodes* material located there. It should be held during the three to five days preceding the annual meeting of ICES in order to permit the maximum number of interested European scientists to participate.

The symposium will be sponsored by ICNAF, and ICES should be formally invited to participate.

All scientists working on *Sebastes* or very closely related groups (such as *Sebastodes*) should be invited to participate whether they are of countries belonging to ICNAF or not.

Dr. LUNDBECK (correspondence through the ICNAF secretariat) will immediately begin soliciting participants, papers, and material for study at the working-party symposium.

He will ask participants to prepare papers in advance of the symposium and the ICNAF secretariat will circulate these among all participants.

The symposium will be conducted as a "working party", after the manner of the Biarritz and Lisbon meetings, and will be directed towards assessing present knowledge, formulating problems in need of solution, designing research programmes for attacking those problems, and dividing work among those studying Atlantic *Sebastes*.

Since *Sebastes* specialists disagree on the interpretation of otoliths, they should make every effort to resolve their differences by the conclusion of this symposium. Therefore, those engaged in age-readings should assemble all evidence to support their interpretations for presentation at the time of the symposium. A special jury of disinterested scientists will be asked to study this evidence, to hear the supporting arguments, and to give a verdict on the acceptability of one side or the other, or, if neither side is sufficiently convincing, on the further research which would be required to produce convincing evidence.

Specimens representing all known species, types, sizes, and ages from larvae to the largest adults will be brought to the meeting for comparison. This should include material from the Pacific Ocean, the collection of which Dr. WALFORD will attempt to arrange.

Dr. TEMPLEMAN is preparing a map showing distribution by species, types, sizes, depth, etc.

Mr. KELLY will correspond with other scientists to prepare a list of measurements and counts required for morphological studies, and will circulate this list as soon as it has been agreed upon.

Dr. LUNDBECK will solicit contributions on all techniques bearing upon the identification of populations, including vertebral numbers, growth-rates, melanism, parasites, serology, parasitism, morphometrics, etc.

Near Northern Seas Committee

Chairman: Dr. J. Hult

I. Proceedings

The Chairman opened the meeting welcoming the members and guests. The list of members was checked. The Administrative Report for 1956 and the *Annales Biologiques* were adopted.

At the request of the Chairman of the Consultative Committee the following items were dealt with:—

1. Rearrangement of Committees. As there was no unanimous agreement on this question the Committee felt that it requires further consideration by the Consultative Committee or a special *ad hoc* Committee.
2. Recommendations from the 1957 co-opted members to the Liaison Committee. The Committee agreed that both these recommendations were of great importance and recommended that action should be taken accordingly.
3. Standardization of mathematical notation for population dynamics. The Committee agreed to the recommendation put forward in the resolution adopted by the Joint Scientific Meeting of ICES, ICNAF, and FAO at Lisbon in May 1957.
4. Measurement of length of fish. The Committee agreed to the great importance of a uniform method for measuring the length of fish and recommended that if the measurement for certain reasons was not made to the nearest centimetre the method of measurement used had to be clearly stated in the report. The Committee recommended the study of the advantages and disadvantages of determining fork length and total length of fish.

Dr. P. Korringa was elected Chairman.

II. Communications

The following papers were presented and discussed by the Committee:—

A. C. Simpson: "The spawning of plaice in the Irish Sea".

J. E. Shelbourne: "New evidence for a 'critical period' in the life of larval plaice".

M. Roessingh: "Problems arising from the expansion of the industrial fishery for the sand-eel *Ammodytes marinus* Raitt, towards the Dutch coastal area".

M. Roessingh: "Observations on the whiting, made by the Netherlands' Institute for Fishery Investigations".

Aa. J. C. Jensen: "Summary report on the whiting statistics presented at the ICES-meeting 1956".

L. K. Boerema: "Assessment of the effect of the mixed haddock-herring fishery in the North Sea".

J. Ancellin: "Résumé des observations faites dans la région du Banc Svinøy".

III. Programme of Work

Provisional research programmes were available for some countries and the representatives for the remainder of the countries promised to send copies of their programmes, as soon as possible, to the Chairman, for distribution to members of the Committee.

The long-term programme was again discussed and although the problem of the rearrangement of committees had not yet been solved it was stressed that a more fixed programme, for instance covering plaice, sand-eel, and whiting research would be of great value for a better co-ordination of the work of the Committee.

IV. Recommendation

The contributions presented to the Near Northern Seas Committee have substantially advanced our information on the identity of the stocks of whiting. This, however, has underlined the need for research ship work. The Near Northern Seas Committee recommends that further research ship work should be carried out and that this work should be co-ordinated between the nations involved.

Baltic-Belt Seas Committee

Chairman: Dr. Aa. J. C. Jensen

I. Proceedings

The current investigations were discussed.

Advance copies of the Administrative Report and of the *Annales Biologiques* were submitted to the contributors for corrections and amendments.

The suggested rearrangements of committee activities, etc., were submitted to the members for comments.

The methods for measuring fish were discussed and it was agreed that most fish other than herring and sprat should be measured to a straight line between the end of the tail lobes. The measurements to half or whole centimetre were discussed, and the importance of stating in each case what method has been used was stressed.

Dr. Aa. J. C. Jensen was re-elected Chairman.

II. Communications

The following papers were read and discussed:—

A. Głowińska: "Temperature and salinity conditions in the Bornholm and Gdansk Deeps during the period 1900—1957".

J. Krey: "The distribution of total phosphorus in the Baltic in August 1956".

K. Demel & Z. Mulicki: "The zoobenthos biomass of the southern Baltic".

III. Programme of Work

It was agreed to continue the previous year's programme for the coming year. Determinations of phosphate and nitrate in all regions and in the different seasons should be extended. Marking of cod and herring should be carried out to as great an extent as possible. The food of the salmon and the role of the porpoise and cod as predators of salmon should be investigated. More extensive marking experiments of sea trout should be carried out in order to elucidate whether the necessary protective measures for the sea trout should be international.

It was decided that the revised form and contents of the long-term programme should be discussed and fixed by correspondence before the next meeting.

IV. Recommendations

I. The scientific meeting for improving the stocks of demersal fish in the Baltic held on 29. September 1957 at the ICES meeting in Bergen has discussed the pressent state of the stocks of cod, plaice, flounder, dab, turbot, and brill and proposals for protecting the stocks, and the participants agreed that international protective measures could increase the commercial catch per fishing unit, and that a new fishery convention for the Baltic should be to the profit of the fishermen.

The proposals for protection agreed upon were:—

1. For some species the international protective measures should be different for the western and eastern parts of the Baltic, respectively, the limit between the areas to be a line between the Rügen and the southern entrance to the Sound or to the southern Scania.
2. For the plaice a size-limit in the western part of at least 25 cm., and in the eastern part of at least 23 cm.
3. For the flounder a size-limit in the western part of at least 25 cm., and in the eastern part of at least 23 cm.
4. For the turbot a size-limit in the western part of at least 30 cm., and in the eastern part of at least 23 cm.
5. For the brill a size-limit in the western part of at least 30 cm., and in the eastern part of at least 23 cm.
6. For the dab no protective measures are needed.
7. For the ripe and spent females of plaice and flounder a closed time of at least two months.
8. For the cod a size-limit of 30 cm.
9. The cod-end meshes for demersal trawls to be 80 mm. (lumen of meshes).

The Baltic-Belt Seas Committee agree that an international convention with the measures mentioned above for the western part of the Baltic should be to the profit also for the fisheries in the Belts and the Sound, if extended to these waters, and it is therefore recommended that the Danish Foreign Office be asked to arrange a meeting of representatives of fishing administrations, research institutions, and fishermen's organizations of all Baltic countries for the purpose of discussing an international convention for the Baltic-Belt Seas incorporating the above-mentioned measures, the meeting to be held at some convenient centre in one of the member countries.

II. The Committee recommends that the papers presented to the Special Scientific Meeting for improving the stock of demersal fish in the Baltic and of the Joint Meeting of the Baltic-Belt Seas and the Salmon and Trout Committees be printed in a special volume of the series *Rapports et Procès-Verbaux*.

Joint Meeting of the Baltic–Belt Seas Committee and the Salmon and Trout Committee for discussing the Salmon Problem of the Baltic

Chairman: Prof. G.. Nikolsky

I. Contributions

The following papers were read:—

G. Alm: "Note regarding the salmon fisheries in the Baltic in recent years".

B. Carlin: "The Swedish rearing of salmon and their importance for the salmon fishery in the Baltic".

F. Chrzan: "The principles and protection of salmonoid fish in the Baltic".

The biological basis for the salmon and sea-trout fisheries in the Baltic was discussed and it was agreed that the stocks and the fisheries should profit by protective measures. The various possible methods were discussed and the recommendations below were agreed.

II. Recommendations

1. That a minimum size-limit for salmon of at least 55 cm. should be introduced internationally.
2. That a minimum mesh for salmon nets and a minimum size of hooks corresponding to the minimum length of the salmon should be introduced internationally.
3. That every country should be asked to introduce size-limits for sea trout as high as possible and to undertake the rearing of sea trout.
4. That a closed season for the salmon fishing for the protection of the stock and to prevent overfishing, should be established internationally.
5. That, as the rearing of salmon on a large scale is of vital importance to the continuation of the salmon fishery in the Baltic, arrangements should be made for discussions as to the possibility of financial contributions from those countries not undertaking this work to those so engaged.

The Baltic-Belt Seas Committee, therefore asks the Council to communicate these recommendations to the governments concerned.

Atlantic Committee

Chairman: Dr. J. Furnestin

I. Proceedings

The list of members was revised. Italy, the new member of the Council, was represented by Professor Maldura.

The Administrative Report was adopted. The *Annales Biologiques* was corrected and the Hult/Wimpenny scheme concerning the publications was unanimously accepted. The question of rearrangement of the Council's committee system was suspended for the time being. As to the introduction of uniform methods of measuring fish, it was agreed that workers in this field should continue to use the methods which appeared to be the most suitable.

Dr. J. Furnestin was re-elected Chairman.

II. Programme of Work

As the special questions pertaining to the subject committees (Scombriform and Sardine) had been treated there, it remained for the Atlantic Committee to discuss material of general interest (without infringing upon the subjects of the special committees) which allowed for certain conclusions to be drawn. The Committee had mainly dealt with the colonization by southern species—Lusitanian and subtropical —of the northern regions of the Atlantic area (within the geographical limits of the Committee). A report, dealing with the native and the European type of fishery and the species caught on the Côte d'Ivoire (Abidjan), was presented by Mr. Lassarat. Mr. Faure gave a preliminary account, accompanied by a chart, of the stucture of the sea bed, the bathymetry, and the possibilities of the Porcupine Bank (W. of Ireland) as a trawling area.

III. Communications

K. Demel: "Liste des espèces de la Mer du Nord qui ont été trouvées dans la Baltique méridionale à la suite des influx d'eau salée en 1947–48".

J. H. Fraser: "Planktonic evidence of recent changes in the environmental conditions in the north-east Atlantic".

F. Navarro: "Poissons rares sur les côtes d'Espagne".

A. E. J. Went: "Recent records of species of fishes rare to Irish coastal waters".

P. Desbrosses & G. de la Tourrasse: "Poissons rares signalés dans le Golfe de Gascogne et à l'entrée occidentale de la Manche depuis 1928".

L. Faure: "La première campagne 1957 du navire océanographique 'Président-Théodore-Tissier' ".

Comparative Fishing Committee

Chairman: Dr. C. E. Lucas

I. Proceedings

The Chairman opened the meeting by welcoming the members of the Committee and visitors. All but one of the member countries were represented and it was noted that the following changes in representation were required for the coming year:— Iceland (Mr. Jakobsson), Portugal (Dr. Ruivo), Sweden (Mr. Otterlind), USSR (Professor Nikolsky and Dr. Treschev).

Small changes were made in the Agenda, particularly to include certain subjects forwarded from the Consultative Committee for discussion and a number of papers prepared for other committees which were relevant to the programme of this committee.

It was noted that the Administrative Report had been received and adopted at the Special Meeting held by the Committee at Lisbon on Thursday 30. May. The Report of that meeting in Lisbon, which had been circulated, was then adopted together with the notes of the meeting held on the same day with members of the Research and Statistics Committee of ICNAF, to discuss fishery matters of common interest to the two bodies. Three matters arising in those meetings, concerning standardization of techniques, etc. in the North Atlantic, were due for further consideration. Recommendation 1 below was adopted as regards the use of "chafing" gear on the upper sides of cod-ends and Recommendation 2 (a and b) on standardizing the measurement and recording of the sizes of fish. It was decided to inform the Liaison Committee of the arrangements made with ICNAF for the survey and comparison now being made of the types of mesh-measuring gauges in use on the two sides of the Atlantic. This has been undertaken by Professor von Brandt on behalf of ICES and by Mr. Medico on behalf of ICNAF, with a view to determining the most appropriate methods for use in the future.

The Committee also received the report prepared at their request by Messrs. Parrish and Beverton, concerning the results of the conjoint scientific meeting with FAO and ICNAF, held at Lisbon between 27. May and 3. June inclusive. This summarized for the Committee those aspects of the proceedings of the conjoint meeting which most concerned this Committee's programme, and it was noted that a more general account of the meeting had been prepared by the Chairman and circulated, with the reports of the special meetings of this Committee, to all members of the Council. Messrs. Parrish and Beverton were warmly thanked for their valuable work and it was decided to adopt the report and to forward it to the Liaison Committee, subject to minor amendments. The Committee also noted among the communications the survey prepared at their request by Professor von Brandt, on the nature and characteristics of twines for fishing gear. It was recognized that this would provide a valuable foundation for further understanding of this subject and Professor von Brandt was warmly thanked for his assistance. It was decided that this paper should also be forwarded to the Liaison Committee.

The many contributions made by members of the Committee to the proceedings of the conjoint meeting of FAO, ICNAF, and ICES in Lisbon, and to this meeting as well as elsewhere, showed something of the considerable progress made since the 1956 meeting. Contributions had been received by members of 12 countries. The requirements of the Council and the Permanent Commission for more, and more precise, information were steadily increasing, however, and careful attention was given in the meeting to a plan for co-ordinating work between groups of countries particularly concerned with different aspects of the Committee's programme (copy circulated before the meeting). Minor amendments were made to the plan and priorities were set on a number of the objectives. After a full discussion it was unanimously decided to adopt the plan as a target for the next meeting.

Members then proceeded to consider how best to implement the plan. It was decided that collaboration would best be maintained by appointing a co-ordinator in each group, who should keep in touch with the appropriate scientists in the countries concerned in that particular part of the plan and with the Chairman; the Chairman should, in turn, provide the co-ordinator with copies of the plan as amended. The object of all would be to devise each country's programme so that its share in the joint plan fitted with that of others, and so that the maximum information, with special regard to priorities, should be available for circulation to members before the next meeting. September 1st was selected as an appropriate date if this is to be achieved and due consideration given to the results.

Careful consideration was given to four topics passed to this Committee by the Consultative Committee, which led to Recommendations 3, 4, and 5 below. It was, however, decided that it was not at present necessary to express a view on the subject of committee organization.

Finally some consideration was given to regularizing the scope of the Committee's activities and Recommendation 7 below was approved.

At the conclusion of the meeting Dr. C. E. Lucas was re-elected Chairman for one year.

II. Contributions

Eleven circulated contributions were for consideration and additional contributions were made verbally by Dr. ROESSINGH. Some provided new information on selection factors and it was noted, both here and in the "Lisbon" papers, that with very few exceptions recent results were in conformity with the results reviewed by the *ad hoc* Committee of the Permanent Commission. One group of papers provided useful data on methods of fish measurement and led to Recommendation 2 below. The Committee heard with interest from Dr. ROESSINGH of a new type of trawl for catching *Ammodytes* (Visserij Nieuws, July 1957, **10**, 3). Information concerning the use of "chafing" gear on the upper side of cod-ends preceded a discussion which led to Recommendation 1 below. Discussion following papers by Professor VON BRANDT and Professor CIEGLEWICZ led to Recommendation 6 below.

Copies of all these papers will be forwarded for the consideration of the Liaison Committee. Note was also taken in the meeting of the underwater television film of fish in the trawl, previously shown by Dr. L. A. WALFORD (visitor from the USA).

J. A. POPE: "Estimates of fishing power".

A. VON BRANDT: "Net materials of synthetic fibres".

W. CIEGLEWICZ & W. STRYZEWSKI: "Selection of Baltic cod by cod-end of different materials".

G. OTTERLIND & G. SELLERBERG: "Some notes on Swedish trawl experiments in the southern Baltic".

J. ZIJLSTRA: "Mesh experiments with a herring trawl".

J. MESSTORFF: "Chafing gear (a short report of the use of chafing gear in Germany)".

D. V. RADAKOV & D. S. NIKOLAEV: "The behaviour of the young coalfish in aquarium with respect to the moving net trap in the presence of predators (the cod)".

B. B. PARRISH & K. BARNETT: "Comparisons between total length and fork length measurements of herring".

J. A. POPE: "Comparisons of total lengths and fork lengths of haddock".

J. A. GULLAND & R. J. H. BEVERTON: "Some proposals on the requirements and presentation of data of fish population studies".

L. K. BOEREMA, K. H. POSTUMA, M. ROESSINGH & J. J. ZIJLSTRA: "Opinions of the Netherlands' Institute for Fishery Investigations on the advantage and disadvantage of measuring fork length or maximum length of fish".

III. Recommendations

1. That in view of the potential danger that "chafing" gear on the upper sides of cod-ends may hinder the escape of small fish, ICES should urge all countries concerned to study the modes of action of "chafing" gear of all kinds, so as to determine their effects on escapement and if possible to develop substitutes which should avoid such risks.

2. (a) That members of ICES be urged, as is now the practice of ICNAF members, to measure fish lengths to the nearest centimetre or, if that is impracticable, to report their data in those terms.

   (b) That ICNAF be informed that at present only in one ICES country are fish commonly measured according to fork length; so that it is not possible to recommend members to adopt that method. It is urged, however, that workers should always record the methods used by them in measuring fish, and that they should pay particular attention to the accuracy of their measurements, especially with regard to the differences between the lengths of the fish before death and *post mortem* lengths.

3. That the recommendation of the Statistical Committee at this meeting on the compilation and publication of statistics of length and age data, etc. of fish in the Council's area should be supported.

4. That ICES should urge all countries to collect data and report on the quantities of protected species rejected at sea. This information is of great importance to the Permanent Commission and tables dealing with it should be compiled and published by the Secretariat.

5. That the proposals, as now amended, made at the conjoint meeting of FAO, ICNAF, and ICES in Lisbon, on the standard notation for mathematical symbols in the fields of fisheries population dynamics, should be adopted by ICES members.

6. That ICES members be urged to record, in relation to the mesh experiments, full particulars regarding the nature and characteristics of twine used.

7. That the scope of this Committee's work be recognized as including studies of the effects of fishing.

Gadoid Fish Committee

Chairman: Mr. G. Rollefsen

I. Proceedings

The list of members was checked and some alterations were noted. The Administrative Report and the *Annales Biologiques* for 1956 were adopted. The Chairman asked the members to study the following:—

1. Dr. Lucas' report from the joint meeting in Lisbon concerning the question of measuring total length or fork length.
2. The recommendations passed to the Consultative Committee regarding the need for prompt dissemination of age and length data, and reports on quantities of protected species rejected at sea.
3. The Hult/Wimpenny proposal for rearrangements of the committee system with the comments collected by Dr. Went.

The discussion of these three items was postponed to the second sitting.

Mr. Gunnar Rollefsen was re-elected Chairman.

II. Communications

G. C. Trout: "The results of English cod tagging in the Barents Sea" (read by Mr. Corlett).

J. Jónsson: "Icelandic cod investigations in south-west and south-east Greenland waters in 1957".

J. A. Pope: "Comparisons of total lengths and fork lengths of haddock".

D. V. Radakov & D. Nikolaev: "The behaviour of the young coalfish in aquarium with respect to the moving net trap in the presence of predators (the cod)".

USSR: "Bottom fishery in the Barents Sea" (read by Dr. Marty).

Of these communications the paper by Messrs. Radakov and Nikolaev was withdrawn, and the paper of Mr. J. A. Pope was transferred to the Comparative Fishing Committee. In addition, Dr. U. Schmidt gave a report of the German coalfish investigations.

III. Programme of Work

The countries concerned would carry on with their research programmes and special attention was drawn to the tagging programmes and the importance of contact between the research workers in this field.

IV. Considerations

The members discussed the three items mentioned above and reached the following conclusions:—

1. The importance of having a prompt publication of age and length data and data on rejected protected species was obvious. But it was necessary to have guidance how to collect and present this information.
2. Regarding the measurement of length the members found themselves unable to recommend one special method. And the question was handed over to the Comparative Fishing Committee.
3. As to the rearrangement of the committees the members found it very difficult to suggest a system which would be convenient. The matter should be studied by a special body established for the purpose of bringing the ICES committee system in accordance with the needs of to-day.

V. Recommendation

The Committee strongly supports the requests made to the Council by the Liaison Committee for the prompt publication of length and age data for all species protected by the Permanent Commission, and data on the quantities of rejected fish, and it recommends that early steps should be taken to obtain from the Permanent Commission advice as to the details and form which the presentation of these data should take.

Herring Committee

Chairman: M. O. Aasen

I. Proceedings

The list of members was checked and certain amendments were made. The Administrative Report and the *Annales Biologiques* were presented and adopted. During the proceedings the members outlined their programme of work for the coming year.

Mr. O. Aasen was re-elected Chairman.

II. Communications

K. H. Postuma: "The vertical migration of feeding herring in relation to light and the vertical temperature gradient".

Veikko Sjöblom: "On the causes of the poor catches of Baltic herring in the summer of 1956 and their causal factors on the Finnish coast".

R. E. Craig: "A relation between herring-drifter catches and hydrographic conditions".
B. B. Parrish & K. Barnett: "Comparison between total length and fork length measurements of herring".
Ju. Ju. Marty: "On the dynamics of marine herring populations and principal conditions for optimal catches".
D. H. Cushing: "The effect of fishing on the herring of the southern North Sea".
D. H. Cushing: "The catches per unit effort of the Bank stock and the Downs stock of herring".
O. Aasen, D. H. Cushing, & K. Popp Madsen: "ICES Herring Tagging Experiments at the Bløden Ground, Parts I & II".
Olav Dragesund: "Estimation of the Norwegian winter herring population based on tagging experiments".
Á. Friðriksson: "Investigations on the north coast herring in Iceland, 1957".
M. N. Lishev: "Study of population dynamics of Salaka (Baltic herring) in the central part of the eastern Baltic".
M. N. Lishev: "Some data to estimate the success of the operation and the selectivity effect of the eastern Baltic herring trawl fisheries".

III. Recommendations

1. Rearrangement of Committees. The Herring Committee wish to continue the Administrative Report and the section in the *Annales Biologiques*.
2. Mathematical Notation. The recommendation passed by the Lisbon meeting is supported by the Herring Committee.
3. The Antarctic Transplantation Scheme. The Herring Committee would be very interested in investigations relating to transplantation of herring to the Antarctic, but the majority of the member countries will not be able to participate.
4. (a) Rejection of Fish at Sea. Member countries are urged to procure data on the rejection of protected species at sea.
   (b) Length and Age Data. It is recommended that length and age data on herring with maturity stages and vertebral counts by months and by statistical squares (on a regional basis) be included in the series *Statistical News Letters*.
5. Herring Tagging Programme. The Herring Committee requests that funds be made available as before for continuing the tagging experiment. For working up the results in Copenhagen, it was decided to approach Mr. Gulland (Lowestoft), Mr. Andersen (Copenhagen), and Mr. Aasen. This group is requested to report to the Working Group as soon as possible. The Working Group is requested to arrange the details of next year's marking programme on the basis of this report.
6. Northern Waters. It was agreed that the co-operation started last year in northern waters be continued.

Sub-group on Co-ordination of Research in Northern Waters

Members: Ul. Ul. Marty (USSR); I. Halgrimsson (Iceland); O. Bagge (Denmark); J. Eggvin, O. Østvedt, O. Dragesund (Norway).

Outlines of plans for the early summer cruises were discussed.

Agreement on place and time of rendezvous was reached: 24.—25. June 1958, at Thorshavn, Faroes.

Detailed programmes to be settled by correspondence before March 1958.

Sardine Committee

Chairman: Dr. J. Cuesta

I. Proceedings

The Chairman opened the meeting by welcoming the members. The following representatives were included in the list of members:— Professor Meyer-Waarden (Germany), Mr. Percier (France), Professor Maldura (Italy), Dr. Vilela (Portugal, substituting Dr. Ramalho), and Mr. Pinto (Portugal).

A report was given of the investigations on sardine which Dr. Cushing will carry out on the coasts of Cornwall and Bretagne next year. Dr. Furnestin reported on the localization of fish banks by means of echo-soundings, investigations of the spawning (planktonic eggs) on the coast of France, and, in Mauritania, of the biology and ecology of this species; Dr. Krefft reported on the sardine caught together with the herring in the North Sea, and Dr. Vilela on biometric measurements and the spawning processes of the sardine in Portuguese waters. Dr. Cuesta pointed out that the same programme would be carried out in the remaining part of the Iberian Peninsula and the Canary Islands. Research on the anchovy would be made by France and Spain.

Mr. Dannevig gave an account of the Norwegian programme of work aiming at the study of the races,

spawning, and spawning places of the sprat. It was proposed by Dr. FURNESTIN to intensify observations of the mortality rate of the planktonis eggs of sardine, and he requested the laboratories on the English and Irish coasts to bear these observations in mind.

Dr. J. CUESTA was re-elected Chairman.

II. Communications

R. MOAL: "Etude comparée de quelques caractères de *Sardina pilchardus* sur la côte occidentale d'Afrique".

J. CUESTA: "Observations biologiques sur la sardine (*S. pilchardus* Walb.) à Santander en 1957".

Scombriform Fish Committee

Chairman: Dr. H. VILELA

I. Proceedings

In opening the meeting Dr. FURNESTIN announced that the President had asked him to take the Chair until a new Chairman had been elected.

The list of members was checked. Messrs. VINCENT-CUAZ and PERCIER were included as new members for France; the Norwegian representation was augmented by Mr. J. HAMRE; for Portugal Dr. VILELA replaced Dr. RAMALHO and Dr. CUESTA was included in the list of representatives for Spain. Professor MALDURA and Dr. SCAECINI were nominated members for Italy.

The Administrative Report was presented and adopted.

Dr. FURNESTIN emphasized the importance of studying the scombriform fish. All the members agreed to investigate the biology of such species as tunny and mackerel and to carry out tagging experiments.

Dr. H. VILELA was unanimously elected Chairman of the Committee.

II. Communications

Six communications were presented and discussed:

L. VINCENT-CUAZ: "L'albacore *Neothunnus albacora* (Lowe) le long des côtes de Mauritanie".

J. DOUTRE: "Déplacement des lieux de pêche de la flotille thonière basée à Dakar".

H. REVHEIM: "Some results of mackerel-tagging in Norway".

J. HAMRE: "Norwegian tuna-investigations".

R. LETACONNOUX: "Récentes observations sur la pêche de *Germo alalunga* Gmelin".

R. KÄNDLER: "Some remarks on age determination of mackerel in the North Sea".

III. Programme of Work

Belgium: Will continue investigations on the mackerel.

France: Tagging of mackerel in the Celtic Sea and in northern localities. Ecological studies of *Th. thynnus*, *Katsuwonus pelamys*, and *Pelamys sarda* in the Bay of Biscay. Investigations of the tunny (*Germo alalunga*) between the Açores, Portugal, and the Bay of Biscay. Investigations of the yellowfin tuna (*Neothunnus albacora*) between Dakar and Congo.

Germany: Investigations of length, maturity, and age (otoliths) of the mackerel. Continuation of tuna research.

Norway: Determination of age, maturity, and length of the mackerel in northern Norway, together with tagging experiments. Fishery research of *Th. thynnus* on the west coast.

Portugal: Investigation of the bio-ecology of the tunny (*Neothunnus albacora*) in the waters between the Açores, Madeira, Cabo Verde, and Guinea.

Spain: Biometric studies of the tunny (*Th. thynnus* and *Germo alalunga*).

Salmon and Trout Committee

Chairman: Dr. A. E. J. Went

I. Proceedings

The Chairman welcomed the members and guests. The list of members was checked and amended where necessary. The Administrative Report for 1956 and the *Annales Biologiques* were discussed and approved. Members gave outlines of the work in progress in 1957 and the programme for 1958 was discussed. Having discussed various aspects of research on salmon and trout the Committee approved of a symposium immediately before the next meeting. The Committee also discussed the Hult/Wimpenny memorandum and the memorandum of the Chairman and recommended that the Salmon and Trout Committee should be permitted, as heretofore, to deal with all problems relating to the work of the Committee in a single report with, where necessary, cross references to the work of the Baltic salmon, some aspects of which may with advantage be dealt with by the Baltic-Belt Seas Committee.

A joint meeting of the Committee and the Baltic-Belt Seas Committee was also held and will be the subject of a report of the Chairman of the Baltic-Belt Seas Committee (see p. 37).

Professor G. V. Nikolsky of the USSR was elected Chairman, the present Chairman having completed his time of office.

II. Communications

W. M. Shearer: "Some notes on salmon and sea trout, transportation experiments, River Dee, Aberdeenshire, 1955 and 1956".

A. Swain: "Factors affecting the downstream migration of salmon and sea trout". (Summary.)

E. M. Malikova: "Biochemical estimation of young salmon in the transition stage before migration to the sea and of smolts in a period of detention in fresh water".

S. Zarnecki: "The amount of roe obtained by artificial fertilization from the winter form of sea trout (*Salmo trutta*) spawning in the affluents of the Upper Vistula". (Summary.)

A. V. Holden: "The use of artificial fertilizers to improve the growth of brown trout".

S. Zarnecki: "The phenomenon of extraordinary growth of brook trout in the lochs in the Tatra Mountains". (Summary.)

S. Zarnecki: "The age and growth of seasonal populations of sea trout entering the River Vistula in autumn 1951". (Summary.)

S. Zarnecki: "The devouring of own eggs by sea trout spawners during the spawning period".

I. I. Lagunov & V. V. Azbelev: "On the Tuloma fishway operation and the condition of salmon stock in the Tuloma River".

Jaime de Foxá: "L'étude des espèces anadromes comme facteur d'exploration des mers".

III. Programme of Work

The Committee decided to continue work on the tagging of salmon and sea trout in all stages and of comparative tests on different tags. It was also decided that investigations on the "regime" of the redds, namely, the effect of different conditions on the efficiency of the process of reproduction should be carried on as far as possible.

IV. Recommendations

1. The Council should ask participating countries to forward plans and specifications to Copenhagen of all types of successful fish passes operating in the respective countries and that these plans, etc. should be examined by a sub-committee of the Salmon and Trout Comimttee to ascertain if it would be possible or feasible to produce a handbook on fish passes.

2. A symposium should be arranged for the Sunday immediately preceding the opening meeting of ICES in 1958 and that the subject matters to be discussed should be:—

(i) the effectiveness of liberating fry, parr, or smolts of salmon and sea trout under different conditions, and

(ii) tags for salmon and trout and their relative effectiveness.

The Committee expressed the hope that an account of Canadian work might be given at the symposium.

Shellfish Committee

Chairman: Dr. H. A. Cole

I. Proceedings

The Chairman welcomed the members and changes in the representation of the member countries were noted. Iceland would henceforward be represented.

The Chairman reminded members of the importance of early submission and circulation of programmes of research so that co-ordination of effort could be arranged. Reports of work done should be in the prescribed form.

The Administrative Report and the *Annales Biologiques* were considered and adopted with minor amendments.

Suggested rearrangement of committees and submission of material for the Administrative Report and the *Annales Biologiques*. The Committee considered the papers presented and passed the resolution recorded below. (Rec. 5.)

Arrangements were made for the showing of a film of the Dutch mussel industry by Dr. P. Korringa and the Committee's appreciation was recorded.

Dr. H. A. Cole was re-elected Chairman.

II. International Research on Lobster Stocks off the South-West of Britain

The Chairman reported that an informal meeting had taken place at Copenhagen in October 1956 between representatives of England, France, Scotland, and Ireland to discuss the advisability of initiating a joint programme of research with the ultimate aim of determining the most appropriate conservation measures for the stocks of lobsters off the South-West of Britain. These stocks were important for the fishermen of the four countries and were to some extent exploited in common. Later, in January 1957, a further meeting was held in London at which the Chairman presided and which was attended by experts from each country. A detailed programme of work was discussed and adopted; it was anticipated that it would occupy 3—5 years. Preliminary reports on work done were submitted by Dr. Went, Mr. Desbrosses, and the Chairman.

III. Sanitary Control—Standardization of Procedures

The Chairman recalled that when this question was first discussed some years ago it had been agreed that as a first step towards the achievement of uniformity in the method of examining shellfish, a comparative study should be made of methods in use in the different member countries. Dr. Korringa stated that Dr. Grijns had submitted a comparison between Dutch and British methods and had concluded that the British method was superior. Dr. Reynolds and Mr. Wood had submitted a comparison of British, Canadian, and Irish methods and had concluded that the British method was suitable for both shellfish and sea water. Further reports were now to be considered from Belgium, France, and Britain. A full understanding of the relative value of the different methods and standards used in the member countries was becoming of increasing importance because of the large export and import trade in shellfish which had developed.

IV. Tour of Norwegian Oyster Production Centres

It was reported that six members of the Shellfish Committee had enjoyed a short tour of oyster production centres in the Bergen University research ship through the courtesy of Dr. B. Rasmussen and Prof. Brattström. The tour had been led by Mr. P. A. Soleim of the Bergen Fishery Museum and Mr. N. B. Antonisen of the Society for the Improvement of Norwegian Fisheries and had proved most successful. Valuable experience of Norwegian techniques had been gained and the gratitude of the Committee was recorded.

V. Communications

R. Th. Roskam: "Gaffkaemia, a contagious disease in *Homarus vulgaris*".

L. Faure: "Sur la présence de *Nicothoë astaci* chez les homards de diverses origines".

P. Korringa: "Risks involved in lobster storage".

F. A. Gibson: "The fishing of *Nephrops* in Ireland".

H. J. Thomas: "Creel selectivity in the capture of lobsters and crabs".

G. Dannevig: "Rearing experiments with lobster larvae".

A. C. Simpson: "The growth and time of moulting of lobsters on the coast of North Wales".

H. J. Thomas: "Some seasonal variations in the catch and stock composition of the lobster".

L. Vincent-Cuaz: "Les langoustes roses de Mauritanie, *Palinurus mauritanicus* Gruvel".

J. P. Jensen: "The relation between body size and number of eggs in marine Malostraca".

J. P. Jensen: "The biology of the Baltic prawn (*Leander adspersus*) in Danish waters".

G. Høpner Petersen: "The species of *Cardium* in Danish estuaries".

R. H. Baird: "Measurement of condition in oysters and mussels".

B. Havinga: "The settling of mussel seed in the Dutch Waddensea".

P. E. Lubet: "Répartition de *Mytilus galloprovincialis* sur les côtes du sud-ouest de la France, quelques particularités de leur biologie".
G. D. Waugh: "Nanoplankton and oyster growth in estuaries".
J. le Dantec: "Le Bassin d'Arcachon; condition de milieu et gisements naturels d'huîtres".
P. Lubet & J. le Dantec: "Recherches sur le cycle sexuel de *Gryphaea angulata* Lmk. dans le Bassin d'Arcachon. (Note préliminaire)".
P. J. Warren: "A device for rapid single-handed measurement of shellfish".
M. Boury & J. Borde: "Méthodes d'examen bactériologiques de l'eau de mer et des coquillages. Essais comparatifs".
B. Rasmussen: "Note on the Norwegian fishery for *Nephrops* in the Skagerak".
S. D. Maeyer-Cleempoel & A. Lafontaine: "Note préliminaire sur l'étude des méthodes à appliquer pour le contrôle bactériologique des huîtres et sur le problème de leur epuration".
P. C. Wood: "Further studies of methods and standards for the biological examination of shellfish".

Dr. Korringa showed slides of the Spanish mussel industry.

VI. Recommendations

1. That the comparative study of methods of bacteriological examination of shellfish and standards of sanitary control used in the member countries be continued.
2. That special attention be given to the study of causes of weakness and loss in lobsters, with special reference to the presence of *Gaffkya*.
3. That it is desirable that further studies should be made of stocks of *Nephrops* fished by the member countries with a view to devising suitable conservation measures.
4. That no change is required in the status or functions of the Shellfish Committee, which should continue to submit a separate Administrative Report and should publish all contributions of a suitable nature in a separate section of the *Annales Biologiques*, if production of this journal is continued (see below).
5. That consideration should be given to the desirability of ceasing publication of the *Annales Biologiques* and to the division of the funds so saved to the publication of an additional number each year of the *Journal du Conseil*.

Hydrographical Committee

Chairman: Dr. G. Böhnecke

I. Proceedings

The list of members was checked. The following new members had been nominated: Prof. M. Picotti for Italy, Mr. J. A. van Duijnen Montijn as second member for the Netherlands, Mr. K. Zagrodzki as member for Poland, and Dr. H. Vilela for Portugal. Furthermore Lt.-Cdr. Lumby informed the Committee that because of his retirement in the near future, England would next year be represented by Mr. A. J. Lee.

The Committee's Administrative Report for 1956 was adopted.

The Hydrographer's report on the work carried out in the Service Hydrographique since the last meeting was adopted.

In this connexion the Chairman drew attention to the extension of the *Synoptic Hydrographic Charts* to cover also the Kattegat, the Belts, and the western Baltic, and Dr. Carruthers expressed his regret that he no longer was able to furnish the current data used earlier for insertion in the Synoptic Charts.

The Hydrographical Committee expressed its appreciation of the work carried out in the Service Hydrographique of the Council.

The Sub-Committee on the Preparation of Mean Charts for Temperature and Salinity (Chairman: Lt.-Cdr. Lumby) reported. The preparation of the punched cards having taken a little longer than was expected, the Sub-Committee had not yet met to decide on further steps in the work. It was therefore proposed that the funds allocated for a meeting in the financial year 1956–57 may be made available for a meeting early in the coming financial year.

Rec. 1 was carried.

Lt.-Cdr. Lumby asked to be replaced in the above Sub-Committee by Mr. H. Hill, Lowestoft. Prof. Dietrich accepted to act as Chairman of the Sub-Committee.

The Provisional Sub-Committee for Mechanizing the Index of Hydrographic Data held by the Council (Chairman: Lt.-Cdr. Lumby) reported.

The importance of having the card index transferred to punched cards was stressed by several members. The Report from the Provisional Sub-Committee (see App. I) was adopted, and it was decided to replace the present Provisional Sub-Committee by an official one, consisting of Messrs. Hela (Chairman), Dietrich, van Duijnen Montijn, Midttun, and Smed.

Rec. 2 was carried.

The Sub-Committee for Considering Standard Methods for Salinity Determination (Chairman: Mr. HERMANN) reported.

The report was adopted and the Hydrographical Committee expressed its thanks to Mr. HERMANN and his Sub-Committee for their work. The Committee furthermore expressed the strong wish that the report should be published by the Council.

It was decided that this Sub-Committee should continue as a liaison committee to the Special Committee on Oceanographic Research (SCOR) in order to keep close contact with the development of instruments.

The Sub-Committee on the International Geophysical Year (IGY) 1957—1958 (Chairman: Dr. BÖHNECKE) reported.

The report (see App. II) was adopted, and Rec. 3 was carried.

Lt.-Cdr. LUMBY, on his request, was replaced in the above Sub-Committee by Mr. A. J. LEE.

The Sub-Committee for Considering the Possibilities of Collecting and Publishing Data Collected by the Bathythermograph (Chairman: Prof. GROEN) reported.

The report (see App. III) was adopted.

The Committee consented to the Sub-Committee's request for disbandment, and the Chairman thanked the Sub-Committee for its work.

The Sub-Committee for the Investigation of Sub-Arctic Deep-Water Overflow across the Iceland-Faroe Ridge (Chairman: Dr. TAIT) reported.

The report (see App. IV) was adopted.

The Sub-Committee on the Co-ordination of Hydrographic Investigations in the Baltic (Chairman: Prof. HELA) reported. The Sub-Committee had arranged a meeting of the interested parties in Helsinki in March 1937, the First Conference of the Baltic Oceanographers, where a report covering the necessary and desirable measures to be taken in order to promote the hydrographical studies of the Baltic had been prepared.

The report from the Sub-Committee was adopted, and it was agreed that the Sub-Committee should continue as a liaison committee between the Conferences of the Baltic Oceanographers and the Hydrographical Committee.

Prof. LEDNEV, on his request, was replaced in the above Sub-Committee by Prof. PREOBRAGENSKY, failing him, Dr. FEDOSOV.

A survey giving information about the routine observations carried out regularly in the member countries was distributed and adopted.

Plans for hydrographic work in the member countries in 1958 were tabled. It was decided that revised plans should be collected by the Service Hydrographique of the Council before the end of 1957 and circulated.

The Chairman drew attention to the plans for a rearrangement of the committees of the Council. It might involve a redrafting of the existing hydrographic long-term programmes for the various regions.

Dr. COOPER reported, at the Chairman's request, on the discussion of units in chemical oceanography that had taken place at the meeting of the International Association of Physical Oceanography (IAPO) in Toronto. IAPO had set up a committee to discuss the question and report to the IAPO meeting in 1960.

Upon request Dr. COOPER, being chairman of the above-mentioned IAPO committee, agreed to act as liaison-person between the IAPO committee and the Hydrographical Committee.

Prof. HELA tabled a report on work carried out in July 1957 in the Barents Sea and north of Svalbard by the Finnish research vessel "Aranda".

The Chairman, on behalf of the members of the Hydrographical Committee, expressed their deep regret that Lt.-Cdr. LUMBY was leaving the Council and thanked him for his important contributions to the work of the Hydrographical Committee during many years.

Dr. BÖHNECKE was unanimously re-elected Chairman.

II. Communications

The following papers were presented:—

J. EGGVIN: "Some results of recent oceanographic research in the Norwegian Sea". Discussion: Mr. KETCHUM.

J. JOSEPH: "The turbidity in the Irminger Sea in summer 1955 and its hydrographic background". Discussion: Messrs. JERLOV, LAEVASTU, MOSBY, GROEN, and SIMPSON.

G. DIETRICH: "Oceanographic problems to be investigated on the research cruises of 'Anton Dohrn' and 'Gauss' during the International Geophysical Year 1957/58". Discussion: Messrs. MOSBY, CARRUTHERS, and EGGVIN.

G. N. ZAITSEV: "Preparation of dynamic charts for seas with a complex pattern of tidal circulation (featuring the Norwegian Sea)". Discussion: Messrs. MOSBY, JOSEPH, LEDNEV, FJELDSTAD, KETCHUM, and the Chairman.

M. PICOTTI: "La participation de l'Italie en l'Année Géophysique Internationale. Contribution océanographique".

M. PICOTTI: "Nouveaux types d'hydrobouteilles en verre et leur emploi en océanographie et en limnologie". Discussion: Dr. CARRUTHERS.

J. H. STEELE: "A hypothesis about discontinuity layers". Discussion: Messrs. FJELDSTAD and JOSEPH.

R. E. CRAIG: "A sea drift-indicator and observations in Scottish waters". Discussion: Messrs. CARRUTHERS, LUMBY, KULLENBERG, and HELA.

J. N. CARRUTHERS: "The simple measurement of deep bottom currents including any cold water creep over Arctic/Atlantic ridges". Discussion: Messrs. KULLENBERG, HERMANN, EGGVIN, DIETRICH, HELA, and the Chairman.

I. M. SOSKIN: "Long-term variations of the hydrographical characteristics in the Baltic". Discussion: Messrs. DIETRICH, KULLENBERG, and the Chairman.

K. A. Sedyh & R. N. Sarynina: "Hydrological conditions in the Barents Sea in 1956". Discussion: Messrs. Hela and Corlett.

P. Groen: "Note on wind-driven currents in the North Sea and their influence on water levels". Discussion: Messrs. Joseph and Kullenberg.

Professor M. Picotti showed a film, "Croisière Adriatique".

III. Recommendations

1. Preparation of Mean Charts.

   It is recommended that the funds (2,500 kr.) allocated for a meeting of the Sub-Committee on the Preparation of Mean Charts in the financial year 1956—57, but not used in that year, may be made available for a meeting in Hamburg or Copenhagen as necessary early in the coming financial year.

2. Mechanization of the Hydrographic Data Index.

   It is recommended that the Council's index of hydrographic data be mechanized and that the IBM system be employed for the purpose. The estimated cost to the Council is 8,300 kr., with an additional charge of about 2,000 kr. in the first year.

   It is furthermore recommended that provision be made for a meeting to be held of the Sub-Committee on the Mechanization of the Hydrographic Data Index. The estimated costs are about 3,000 kr.

3. International Geophysical Year.

   It is recommended that in order to have a closer network of stations in the Polar Front Survey, and to avoid overlapping, the sections in some regions should be modified. The position of the sections should be discussed between the members concerned.

   It is furthermore recommended that all member countries send to the Service Hydrographique of the Council the exact dates for the departure and return of their research ships taking part in IGY work.

APPENDIX I

Report of the Provisional Sub-Committee for Mechanizing the Index of Hydrographic Data held by the Council

By J. R. Lumby

1. Terms of reference

The existing "Sub-Committee for the Preparation of Mean Charts of Surface Salinity and Temperature", consisting of Messrs. Lumby (Chairman), Dietrich, Groen, and Smed, has considered the use of mechanical means for recording the hydrographic data collected by ICES.

2. General situation

Every year the Service Hydrographique in Copenhagen receives about 50,000 sets of hydrographic observations from the members of ICES. They are recorded by hand on cards which serve as an index of the observations and in the preparation of the *Bulletin Hydrographique*. As the index continues to grow, so the employment of this valuable collection of data for scientific and practical purposes becomes more and more troublesome and time-consuming. The recording of observations on IBM punched cards has proved valuable in many branches of science. For example, this system is very widely used in maritime meteorology, and the Hydrographic Office, Washington, has been using it for hydrographic data for several years.

3. Proposal for mechanization

It is accordingly proposed that the Council's index of hydrographic data should be mechanized. The volume of data received each year is increasing and the limit of the capacity of the Service Hydrographique to handle it has been reached already. The main advantage of mechanization would be that the large volume of data could be handled without a corresponding increase in staff.

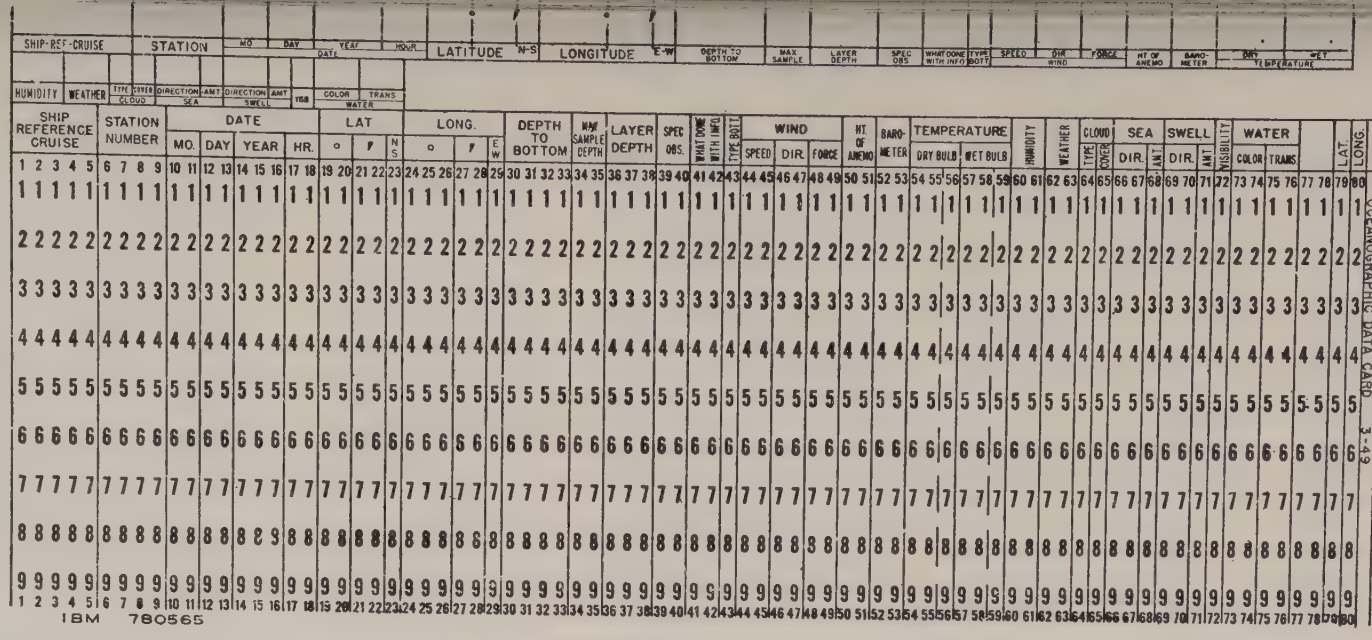
Furthermore the treatment of special problems would be facilitated and hastened to a remarkable degree.

Copies of the data can be easily obtained, since the punched cards can be copied mechanically.

4. Procedure

The following procedure is suggested:—

(a) *Cards.* It is recommended that the IBM system be used with the cards adapted as necessary to the Council's requirements. A copy of card number 780 564 is attached to this report, together with card number 780 565, in which provision has been made for recording certain additional information,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VISIBILITY
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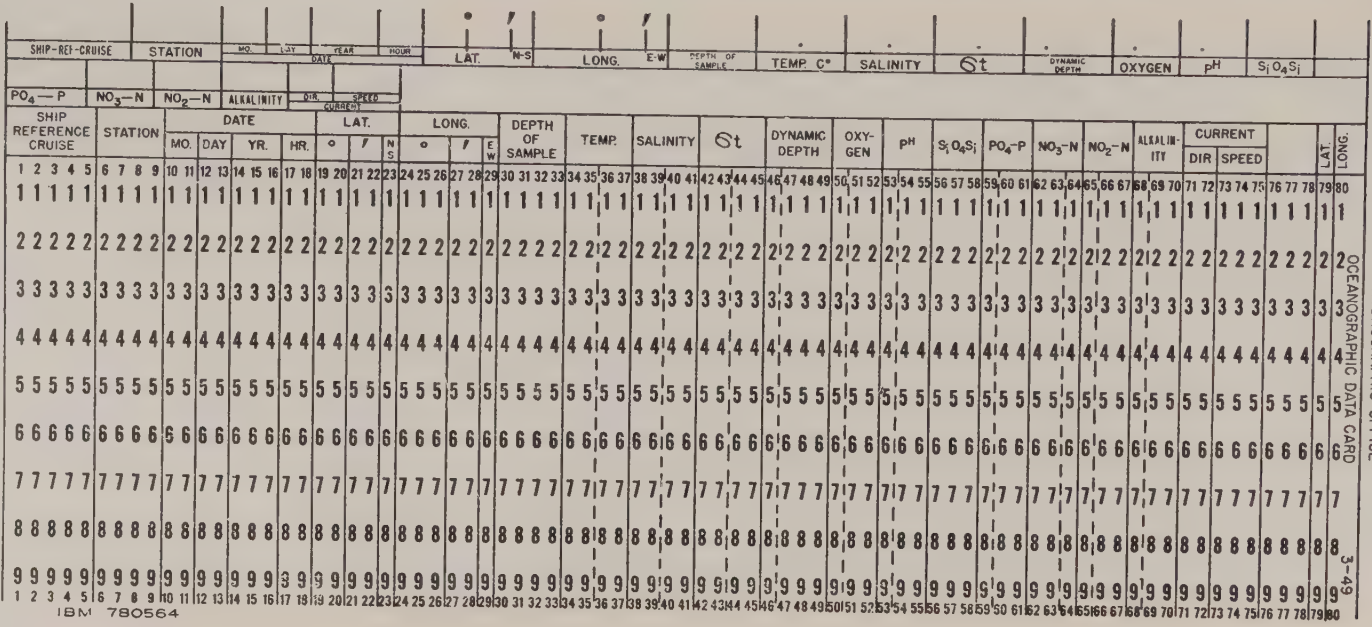
U. S. NAVY HYDROGRAPHIC OFFICE
OCEANOGRAPHIC DATA CARD
3-49
IBM 780565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OCEANOGRAPHIC DATA CARD
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IBM 780564

e. g., meteorological observations and observations of sea and swell.

It is recommended, firstly, that provision be made to record salinity with three decimals and, secondly, that with the exception of oxygen, the chemical data and the current measurements (columns 59 to 75 on card 780 564) should not be recorded numerically; the record should indicate only that data are available in the Service Hydrographique. This would not preclude the recording of the numerical data later on.

(b) *Collection of data lists.* For reasons of simplicity, it is urgently recommended that all institutions should send in their observations arranged in the same order as the columns on the punched cards.

(c) *Punching the cards.* The data would be recorded on cards as soon as the lists were received by the Service Hydrographique. The time required for punching the cards should not differ very much from that needed to write the data by hand on cards. For punching the cards the Service Hydrographique would have to be equipped with a punching machine, which should be fitted with a printing device, so that the data can be typed on the punched cards in the same way as on an ordinary index card. It is suggested that the cards should be checked visually by the staff, not mechanically.

(d) *Sorting the punched cards.* A set of observations may be sorted by area and by date with an IBM sorting machine. As the sorting of, for example, 50,000 punched cards would take only a few weeks, the hiring of such a machine continuously would be uneconomical. It has been ascertained that other institutions in Copenhagen possess IBM sorting machines on which this work can be carried out. After sorting, the cards may be filed. Instead of the handwritten cards the index would consist of punched cards, containing the data in legible form as well as in the form of holes punched in the cards.

(e) *Lists of data.* Lists of data on the punched cards can be produced mechanically with the IBM accounting machine. Since the tabulation of 50,000 cards could be done in a few days, it would be uneconomical to hire such a machine continuously. It is possible to arrange for the use of an accounting machine owned by another institution in Copenhagen.

5. Estimated costs

The estimated annual costs relating to the recording of hydrographical data and the automatic copying of the punched cards are as follows:—

1.	Hire of an IBM punching machine with attachment for printing	kr. 5,000
2.	Fee for use of an IBM sorting machine	,, 1,700
3.	Fee for using an IBM accounting machine	,, 800
4.	50,000 cards	,, 800
		kr. 8,300

In addition there would be an initial, non-recurrent charge of about kr. 2,000.

It is understood that for requests involving machine operation a fee will be charged.

6. Bulletin Hydrographique

In this connexion it should be pointed out that the introduction of this mechanical system for recording the data has a considerable bearing on the preparation and publication of the *Bulletin Hydrographique.* For instance, by means of the IBM accounting machine, lists of data can be easily produced from which the Bulletin could be prepared, either in its present form or, for instance, as loose sheets. The Sub-Committee feel, however, that to make definite recommendations on this point at present would be premature and recommend that the matter receive further consideration.

7. Exchange of data

The Sub-Committee consider that the proposal for an exchange of data between the Council and the U.S. Hydrographic Office appears to offer great advantages to the Council. Until further enquiries have been made we feel unable to put forward definite recommendations on the matter, except to the extent that the project should be given general encouragement.

APPENDIX II

Report of the Sub-Committee on the International Geophysical Year 1957–1958

By G. Böhnecke

The programme for the investigations involved in the Polar Front Survey was considered.

It was regretted that it was not possible to learn more about the Spanish plans. It was hoped, however, that Spain would make every effort possible to carry out the plans as they are known at present. These plans are considered to be of great importance for the entire work of ICES in connexion with the IGY.

The plans of the International Commission of the Northwest Atlantic Fisheries (ICNAF) for the IGY work were received with much appreciation. The sections which will be worked by ICNAF will fill the gap in the plans of ICES.

It was recommended that in order to have a closer network of stations, and to avoid overlapping, the sections in some regions should be modified. The position of the sections should be discussed between the members concerned.

It was furthermore recommended that all member countries send to the Service Hydrographique of the Council the exact dates for the departure and return of their research ships taking part in IGY work.

In consequence of these recommendations the Service Hydrographique will prepare a new issue of the chart showing the sections to be worked and set up a time-table containing the dates of departure and return, as far as known at present, of the participating ships. It was agreed that the chart and the time-table will be circulated about the 15. November to all member states with a request to give their amendments, if any, to the chart and the time-table. Replies should be to hand before 31. December 1957.

The Sub-Committee recalled the kind offer, expressed some years ago in Copenhagen by the British Hydrographer, to do everything possible to fill in gaps by offering assistance by his ships where his service commitments permit.

All member countries are requested to send their data from investigations during the IGY to the Service Hydrographique of the Council *as soon as possible.*

The Sub-Committee for IGY invite the attention of the members of the Hydrographical Committee to the special arrangements regarding data which are in force during IGY. Members are asked to send *2 copies* of their data to the Service Hydrographique and are reminded that copies should also be sent (through their National Committees or otherwise) to IGY World Data Centers.

APPENDIX III

Report of the Sub-Committee on BT Data

By P. Groen

The Sub-Committee has considered various schemes that could be followed in taking data from bathythermograms in order to put them on punched cards.

As for the standard depth at which temperatures should be read for the extract to be made, it is recommended that the metric system be followed, as is done for the serial observations, and that at least the following depths should be taken for the purpose:— 0, 10, 30, 50, 75, 100, 150, 200, 250, 300 metres.

All these temperatures can be put on one punched card, which can also contain the depth of the upper mixed layer. A second card should be used for recording accompanying data, to be taken from the BT log sheet.

All data should be sent to the Service Hydrographique on standard forms, from which they can be punched directly.

The Sub-Committee recommends that it be disbanded and that further technical details be considered by the Sub-Committee for Mechanizing the Work of the Service Hydrographique.

APPENDIX IV

Report of the Sub-Committee for the Investigation of Sub-Arctic Deep-Water Overflow across the Iceland-Faroe Ridge

By John B. Tait

The Chairman intimated the acceptance in principle, by the Hydrographic Committee, of the Draft Plan of investigation prepared by the Sub-Committee, with tentative promise of at least eight research ships participating, one each from Denmark, Iceland, Scotland, and the USSR, and two each from Germany and Norway. The possibility of at least one further ship from another country was mentioned.

With reference to the chart accompanying the Draft Plan, Denmark requested to operate as either ship B or C, Germany as ships A and F, Iceland as ship G or H, Scotland as ship B or C, and the USSR as ship B or E.

Dr. Cooper asked if all participating ships would have the navigational aids necessary for accurate position-fixing on such a close grid of stations. Dr. Lednev said that the USSR ships did not yet have these aids and asked for the assistance of the Sub-Committee in procuring them. Dr. Böhnecke mentioned that this same matter had been raised at the meeting of the CSAGI Working Group for Oceanography in Gothenburg in January 1957, and recommended communication with the Admiral Day, co-ordinator for IGY investigations under CSAGI, who was preparing a summary of information on navigational aids.

It was strongly recommended that all participating ships in the proposed investigation should have adequate electronic or radio position-fixing equipment (e. g., Loran and Decca).

Mr. Hermann pointed out that since an essential part of the plan depended upon adequate current-measuring equipment the suggested date of June 1959 might not be suitable if such equipment were not forthcoming by that time. It was resolved to keep in close touch with current meter developments in all countries.

Dr. Böhnecke stressed the importance of frequent records of position being entered on all echograms.

Additions or amendments to the Draft Plan submitted in memoranda by Dr. Cooper, by Dr. Lednev, and by the International Association of Physical Oceanography in a letter to ICES warmly commending the Plan, were considered under the several paragraphs of the Draft Plan. Further consideration by correspondence will have to be given to these submissions a number of which depend upon (a) the availability of improved equipment and (b) the participation of additional ships.

A revised Plan will be submitted for the next Council Meeting.

Plankton Committee

Chairman: Prof. E. Steemann Nielsen

I. Proceedings

The list of members was checked. The reports on work done in 1956 were adopted. It was agreed to send a recommendation to the Consultative Committee concerning the publication of the papers submitted to the Plankton Symposium.

A report about the progress in publishing the Plankton Identification Sheets was presented by Dr. Fraser. It was decided to send a letter of thanks to Dr. Thorson who wanted to cease to be co-editor of the Identification Sheets.

It was decided to leave it to the other committees to discuss the problems concerning rearrangement of committees.

It was decided to send a recommendation to UGGI that a symposium on underwater illumination should be arranged in connexion with the UGGI meeting in 1960.

A plan concerning plankton monographies was presented by Prof. Krey. It was agreed that there was a very great need for taxonomic papers. It was decided that the plan should be considered by Prof. Krey, Prof. Braarud, and Dr. Cole. A plan of a possible symposium on zooplankton in some few years was discussed.

Prof. E. Steemann Nielsen was re-elected Chairman.

II. Communications

B. M. Bary: "A closing high-speed plankton catcher for use in vertical and horizontal towing".

M.-L. Furnestin (presented by Professor F. Bernard): "Chaetognathes and zooplankton of the Moroccan Atlantic area".

P. J. Warren: "Description of an improved rotation counter for zooplankton".

F. Bernard: "Density of zooplankton viewed from the bathyscape".

W. Mańkowski: "Preliminary investigations of the plankton production of the southern Baltic".

Dr. Zenkevitch's proposal to UNESCO.

III. Recommendations.

1. The Plankton Committee and all participants of the Symposium strongly recommend that all papers and recommendations be published by the ICES. It should be stressed that the nature of the subject considered call for an expeditious printing of such a publication.

2. The Plankton Committee and the Symposium wished to express the usefulness of the papers of the type presented by FAO at the Symposium. It is hoped that FAO will find possibility of publishing these contributions separately. The members of the Symposium expressed their willingness to assist in the final editing of these papers.

Statistical Committee

Chairman: Dr. J. Lundbeck

I. Proceedings

Bulletin Statistique for 1955 and *Fisheries News Letters* No. 1 were presented, the letter compiling the catch and effort statistics for the herring of the North Sea after small areas and months.

The compilation and publication of statistical material as to size and age composition of the catches of fishes protected by the 1946 Fisheries Convention and of the herring of the North Sea was considered.

Dr. J. Lundbeck was re-elected Chairman.

II. Communication

J. A. Gulland & R. J. H. Beverton: "Some proposals on the requirements and presentation of data for fish population studies".

III. Recommendations

The Statistical Committee recognizes the importance of the requests from the Liaison Committee for the prompt publication of length and age data for all protective species, and it recommends that the Secretariat should undertake the collection of these data for protective species and the herring from member countries with a view to their being published promptly and regularly in the *Statistical News Letters*.

VERSION FRANÇAISE

Rapport et Recommandations du Comité Consultatif

Président: M. R. S. WIMPENNY

I. Compte-rendu

1. A la première séance le Président informe le Comité que cette année il a été nécessaire de faire trois séances, car plusieurs des membres doivent assister au Congrès des Engins de Pêche de la FAO à Hambourg, qui commence le 7 octobre, et une grande partie des questions finales sera soumise à la seconde séance, qui sera la séance la plus importante du Comité.

2. Programme des réunions.

Quelques modifications et additions sont faites au programme; étant donné que dans la plupart des comités il y aura un grand nombre de contributions une demande générale reclamant d'avantage de temps est présentée. Une réunion commune entre les Comités du Saumon et de la Truite et des Mers Baltique-Belts est fixée, et il est décidé d'inviter le Professeur G.V. NIKOLSKY à la présider.

3. Questions à débattre.

Le Président attire l'attention des membres sur quatre questions, qui seront discutées en comités, soit: (a) la future structure des comités, (b) les recommandations des membres co-optés du Comité de Liaison à l'égard de la publication par le Conseil des données sur la taille et l'âge des éspèces protégées et des rapports sur les quantités d'espèces protégées rejetées à la mer, (c) la numération standard mathématique des forces dynamiques des populations, et (d) une méthode unique pour mesurer les poissons.

4. Rapports des comités.

A la seconde séance la plupart des rapports se trouvent sur la table, et quand ce n'est pas le cas le Président intéressé fait un exposé sur le compte-rendu et les recommandations de son comité.

Le Prof. STEEMANN NIELSEN présente ses remerciements au Comité d'avoir donné son adhésion au Symposium du Plancton, qui a eu un grand succès et auquel des experts de nombreuses parties du monde ont assisté. Il n'ignore pas, que la recommandation sur la publication des contributions présentées au Symposium causera des dépenses assez larges, mais d'un autre côté, le Conseil pourra facilement vendre en nombre élevé d'exemplaires car ces contributions seront probablement fortement demandées. La Recommendation 2 est adoptée.

Après une discussion approfondie, les recommandations du Comité des Mers Baltique-Belts portant sur les mesures de restriction à prendre dans ce secteur sont acceptées, et la Recommandation 3 est adoptée.

La recommandation sur la publication des contributions présentées à la réunion spéciale scientifique ainsi qu'a la réunion commune des Comités des Mers Baltique-Belts et du Saumon et de la Truite est également adoptée (Rec. 2b).

La recommandation du Comité des Mers Nordiques Proches portant sur la publication des données statistiques du merlan, et du rapport du Dr. JENSEN, présenté cette année, est unanimement adoptée (Rec. 2e).

Le Dr. HULT, ayant résigné ses fonctions de président, est acclamé par le Comité.

M. AASEN, Président du Comité du Hareng, souligne la Recommandation 5 de son comité traitant la poursuite, sur une vaste échelle, des expériences de marquage dans la Mer du Nord, qui ont été commencées à la suite de la réunion de l'année dernière. Afin d'élaborer un bon projet de travail, deux experts en forces dynamiques des populations, Mrs. GULLAND et K. P. ANDERSEN, doivent se réunir avec M. AASEN, ils doivent examiner les données déjà obtenues et élaborer un plan sur les travaux de marquages dans le but d'obtenir que le plus grand nombre possible de données soit retourné. Après une discussion sur les fonds nécessaires à cet effet, il est convenu d'adopter la recommandation et de soumettre la question de dépenses au Bureau (Rec. 4).

Le Dr. WENT attire l'attention des membres sur la décision unanime du Comité du Saumon et de la Truite de demander la permission de faire un rapport administratif dans lequel seront inclus tous les travaux sur le saumon et la truite et contenant, si le besoin s'en fait sentir, des renvois aux travaux sur le saumon de la Baltique. Il souligne ensuite la Recommandation 1, que les pays membres doivent envoyer des plans et des spécifications de tous genres d'échelles à poissons utilisées avec succès dans les différents pays, dans le but de rédiger un manuel sur ces installations. Afin d'examiner cette question un sous-comité sera établi à la prochaine réunion du Conseil.

En rendant compte du projet de faire, l'année prochaine, un Symposium, le Dr. WENT informe les membres qu'au cours des discussions tenues au Comité du Saumon et de la Truite, plusieurs questions essentielles ont été soulevées et plusieurs personnes ont présenté des informations de grande valeur, qui n'ont

jamais été publiées. La Recommandation 5 est adoptée.

Le Dr. Cole rend compte de la réunion du Comité des Mollusques et Crustacés; un grand nombre de contributions a été présenté à la réunion et pas moins de cinq recommandations, dont trois concernent les programmes de travail. Il s'ensuit une brève discussion sur la Recommandation 3 du Comité, se rapportant au fait qu'il est désirable qu'une étude des stocks du *Nephrops* soit faite, car, suivant l'avis du Comité, le *Nephrops* n'est pas exploité judicieusement.

Le Dr. Cole donne un compte-rendu détaillé sur la Recommandation 5, résultat de l'examen du mémorandum du Dr. Bückmann sur l'organisation des comités, il a été exprimé que l'idée de fournir un rapport annuel sur la situation biologique a fait son temps, et il a été convenu de recommander d'interrompre les *Annales Biologiques*. Etant donné que cette question ne pourra être résolue au cours de la réunion du Comité Consultatif, le Président propose de la mettre sur l'Ordre du Jour l'année prochaine, ce qui permettra à tous les comités de délibérer sur la question, qui pourra ensuite être examinée à la réunion finale du Comité.

Le Comité des Mers Nordiques Lointaines n'a aucune recommandation, mais ses membres ont l'intention de préparer une réunion sur la classification des sébastes; la réunion se tiendra en coopération avec l'ICNAF en automne 1959. Le Président du Comité Consultatif propose que l'on remercie le Dr. Tåning de sa longue présidence, et qu'on le félicite d'avoir obtenu le poste le plus éstimé du Conseil: celui de Président.

Le Dr. Lucas fait un exposé sur les recommandations du Comité des Pêches Comparées, recommandations faites comme suite à la réunion de Lisbonne, et aux problèmes qu'ont été soumis au Comité des Pêches Comparées par le Comité de Liaison.

Le Dr. Böhnecke rend compte de la grosse somme demandée par le Comité Hydrographique dans sa recommandation. Du fait qu'il est très difficile de traiter le nombre croissant des données hydrologiques, actuellement 50.000 groupes par an, de la même manière qu'autrefois (écrivant les cartes à la main, etc.), le Comité a sérieusement discuté la proposition de mécanisation du fichier hydrographique, comme l'ont par exemple les météorologistes depuis longtemps. Un sous-comité a été établi dans le but de trouver les meilleurs moyens d'une telle mécanisation, et une somme de 3.000 c.d. est demandée pour la réunion du sous-comité l'année prochaine. Les données BT seront également incluses dans la mécanisation. Un rapport du M. Hermann sur la standardisation de la détermination de salinité a été vivement apprécié par le Comité, et comme on pourra s'en servir comme manuel en étudiant les nouvelles méthodes, il a été proposé de publier ce rapport. Les Recommandations 6 et 7 sont adoptées.

Le Dr. Cuesta souligne que le Comité de la Sardine s'occupera tout spécialement de l'étude de la mortalité chez les oeufs pélagiques de la sardine.

5. Structure future des comités.

Les documents soumis à cet égard se trouvent de nouveau sur la table. Les opinions des membres sont tellement divergentes que, après considération soigneuse de la question, il est décidé qu'à présent l'on ne peut arriver à une solution acceptable par tous, et la Recommandation 1 est adoptée.

6. Recommendations des membres co-optés du Comité de Liaison.

Ces recommandations ont été examinées dans tous les comités. Les Comités des Poissons Gadoïdes, du Hareng, et Statistique ont adopté les recommandations du Comité du Liaison, et le Comité des Pêches Comparées a de plus appuyé la recommandation du Comité Statistique. Le Président souligne, que le Secrétariat sera chargé de la publication des données, sur l'âge et sur la taille des espèces protégées et également sur les quantités de poissons des espèces protégées rejetées à la mer, et que le Secrétaire Général doit contacter tous les pays pour essayer d'obtenir ces données. Les membres discutent brièvement dans quelle série du Conseil ces informations seront publiées, et si l'on doit en faire un seul volume ou toute une série de publication. Sur la proposition du Dr. Went, soutenue par le Dr. Lucas, les Recommandations 2c et d sont adoptées à l'unanimité.

7. Numération mathématique des forces dynamiques des populations.

Le Président attire l'attention des membres sur la contribution distribuée à la première réunion du Comité, qui provient de la réunion de Lisbonne, et qui souligne le désir d'uniformiser les symboles mathématiques. Dans le domaine des forces dynamiques des populations — arithmétique très compliquée qui est venue à la biologie depuis quelques années — il serait plus facile, si les gens travaillant ces problèmes employaient les mêmes symboles. La Recommandation 9 est adoptée.

8. Standardisation des méthodes pour mesurer les poissons.

A la réunion du Comité des Pêches Comparées une discussion essentielle sur cette question s'est tenue et a abouti à une recommandation. Afin de se conformer à ce que fait l'ICNAF, où les poissons sont mesurés jusqu'à l'intersection des lobes caudaux ("fork length"), les membres ont discuté les méthodes pour mesurer le poisson employées dans les divers pays, et il est apparu qu'un seul pays membre du Conseil emploie communément la méthode de "fork length". Après une discussion sur les détails techniques de mensurations, on a décidé de demander au Secrétariat de produire une liste sur les recommandations adoptées par le Conseil à l'égard des méthodes standard pour mesurer le poisson, et de considérer à nouveau la question l'année prochaine.

9. Election du Président.

M. Wimpenny annonce que son terme de 5 ans de présidence se termine cette année et en remerciant les membres de l'appui qu'ils lui ont donné, il leur demande d'élire un nouveau Président.

Le Dr. Went est élu Président à l'unanimité.

II. Recommandations

1. Organisation

Il est convenu d'établir un petit Comité *ad hoc* composé par le Dr. WENT, assisté de M. ROLLEFSEN et du Dr. KORRINGA, pour étudier la question d'une réorganisation des comités. Le Comité *ad hoc* doit préparer un rapport qui sera envoyé au Secrétariat au plus tard un mois avant la prochaine réunion du Conseil au cours de laquelle la question sera traitée et soumise au Comité Consultatif qui en délibérera au cours de sa réunion finale.

2. Publications

(a) Il est décidé que toutes les contributions, discussions et recommandations présentées au Symposium sur les "Mesures de la production de base en mer" seront publiées par le CIEM; il est souligné, que la nature du sujet considéré exige une prompte publication[1]).

(b) Il est convenu que les contributions présentées à la réunion spéciale du Comité des Mers Baltique-Belts pour discuter des mesures à prendre en vue d'améliorer le stock de poissons démersaux dans la Baltique, ainsi que les contributions présentées à la réunion commune des Comités du Saumon et de la Truite et des Mers Baltique-Belts seront imprimées dans les *Rapports et Procès-Verbaux*. Les frais seront approximativement de 10.000 c.d.

(c) Il est décidé que les données statistiques sur le merlan de la Mer du Nord, récoltées l'année dernière, ainsi que le rapport du Dr. AAGE J. C. JENSEN présenté cette année, seront publiés dans un volume des *Statistical News Letters*.[2])

(d) L'importance de la demande du Comité de Liaison, d'une prompte publication des données sur la taille et l'âge pour toutes les espèces protégées, est reconnu, et il est convenu que le Secrétariat doit recueillir ces données pour les espèces protégées et pour le hareng auprès des pays membres, afin de les publier promptement et régulièrement dans les *Statistical News Letters*.

(e) Il est convenu que le CIEM insistera auprès de tous les pays pour qu'ils rassemblent des données et des rapports sur les quantités rejetées à la mer parmi les espèces protégées. De tels renseignements sont très importants pour la Commission Permanente, et des tableaux les concernant seront établis et publiés dans les *Statistical News Letters*.

3. Démarches pour le Bureau

Conformément à la Recommandation 1 du Comité des Mers Baltique-Belts il est convenu que le Conseil demandera au Ministère des Affaires Etrangères du Danemark d'organiser une réunion des administrations des pêches, des instituts de recherche, et des organisations de pêcheurs de tous les pays Baltique-Belts, dans le but de discuter une Convention Internationale des mers Baltique-Belts comprenant les mesures mentionnées dans cette recommandation. La réunion se tiendrait dans un lieu central d'un des pays membres.

4. Programme International de Marquage du Hareng

(a) Il est convenu de prendre contact, par l'intermédiaire du Ministère des Affaires Etrangères, avec les pays intéressés pour leur demander que des fonds soient rendus disponibles, comme par le passé, pour la continuation des expériences de marquages.

(b) Pour la présentation des résultats à Copenhague il est décidé de prendre contact avec M. GULLAND, M. ANDERSEN et M. AASEN. Ce groupe présentera un rapport au Groupe de Travail aussitôt que possible. Le Groupe de Travail est prié d'organiser les détails du programme de marquage de l'année prochaine sur la base de ce rapport.

5. Réunion Spéciale

Il est décidé que le Symposium demandé par le Comité du Saumon et de la Truite se tiendra le samedi ou le dimanche avant la réunion du Conseil en 1958, et que les sujets à délibérer seront les suivants:—

(i) l'efficacité de la libération, dans des conditions différentes, du frai et des alevins du saumon (parr et smolts) ainsi que de la truite de mer, et

(ii) le marquage et son efficacité pour le saumon et la truite.

On espère qu'un compte-rendu du travail canadien pourra être donné à ce Symposium.

6. Classification des Données Hydrologiques

Il est décidé en principe que l'index du Conseil des données hydrologiques sera mécanisé et que le système "IBM" sera employé dans ce but. Les prévisions de dépenses annuelles pour le Conseil seront de 8.300 c.d. sans compter des dépenses supplémentaires d'environ 2.000 c.d. la première année. Le Bureau traitera cette question à nouveau, au cours de sa réunion du mois de mai 1958.

7. Réunions Intermédiaires

(a) Il est convenu que la somme de 2.500 c.d., destinée à une réunion du Sous-Comité pour la Préparation des Cartes Moyennes dans l'année financiaire 1956/1957 mais non utilisée au cours de cette année, sera employée pour une réunion soit à Hambourg soit à Copenhague suivant les exigences et aussitôt que possible dans l'année financiaire à venir.

(b) Il est décidé en principe que des dispositions seront prises pour tenir une réunion du Sous-Comité de la Mécanisation de l'Index des Données Hydrologiques. Les frais seront approximativement de 3.000 c.d.

8. Numération Standard

Il est convenu que les propositions, maintenant modifiées, faites au cours de la réunion commune de la FAO, de l'ICNAF et du CIEM, tenue à Lisbonne, sur la numération standard des symboles mathématiques dans le champ des forces dynamiques des populations seront adoptées par les membres du CIEM.

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[1]) Ces contributions ont paru en avril 1958 dans les *Rapport et Procès-Verbaux*, **144.**

[2]) Paru en avril 1958 comme No. 3 de cette série.

Rapports et Programmes des Comités

Comité des Mers Nordiques Lointaines

Président: Dr. Å. Vedel Tåning

I. Compte-rendu

Le Président souhaite la bienvenue aux membres et aux invités. Tous les pays, sauf la Finlande, les Pays-Bas et l'Irlande, sont représentés. Deux modifications sont apportées à la composition du Comité: l'Allemagne est représentée par le Dr. A. Kotthaus et l'Islande par M. J. Magnússon.

Le Rapport Administratif et les *Annales Biologiques* sont adoptés. Le Comité discute plusieures questions concernant le travail dans le secteur.

Le Comité étudie ensuite trois questions qui lui sont soumises par le Président du Comité Consultatif:

(a) Organisation des Comités. La question est débattue de telle sorte que toutes les personnes présentes soient au courant du rapport du Dr. Went, leur permettant ainsi de faire de nouvelles propositions en fonction de ce rapport au Président du Comité Consultatif.

(b) Le Comité de Liaison propose que les données sur la taille des poissons ainsi que les données sur le rejet des poissons à la mer soient publiées par le Conseil. Le Comité accepte cette recommandation.

(c) Les types de numération mathématique, recommandés à la réunion de Lisbonne, sont portés à la connaissance des membres du Comité.

Les travaux de recherche (*Sebastes*) font l'objet d'une discussion assez longue, et il est recommandé que, dès à présent, les experts intéressés commencent la préparation des contributions, ayant surtout trait à la taxonomie de ce groupe, afin de pouvoir présenter ces contributions à la réunion annoncée par l'ICNAF, qui doit avoir lieu en automne 1959, et dont le Prof. J. Lundbeck sera l'organisateur. Un petit Comité *ad hoc* composé par des spécialistes de *Sebastes* est prié de tracer les grandes lignes des questions exigeant une action immédiate de ceux qui s'occupent de la taxonomie, de la distribution et de la détermination de l'âge de ce poisson comestible si important.

M. Jón Jónsson, Islande, est élu Président pour l'année à venir.

II. Communications

Les rapports suivants sont présentés et discutés; les auteurs des rapports marqués d'un astérisque n'étaient cependant pas présents, et quelques questions qui se sont posées à l'égard de leurs rapports ne pouvaient en conséquence être élucidées.

*A. S. Baranenkova: "Some information of the distribution of *Sebastes*".

J. Magnússon: "Some notes on the sex composition of catches of redfish in Icelandic and East Greenland waters".

A. Kotthaus: "Remarks on the race question in redfish studies". (Avec projections.)

*V. I. Travin: "Size and age composition of redfish in some areas of the North Atlantic in 1956".

*T. S. Rass: "Biogeographical fishery complexes of the Atlantic and Pacific Oceans and their comparison".

I. Hela: "Statement on the cruise of R/V 'Aranda' July 1957 in the Barents Sea and north of Spitsbergen".

III. Programme de Travail

Les programmes des travaux à la mer déjà élaborés par quelques pays sont présentés. Plusieurs pays n'étaient pas encore à même de fournir les programmes de leurs croisières dans le secteur. Au mois de janvier 1958 ces programmes seront communiqués par circulaire par l'intermédiaire du Bureau Central.

Allemagne: Le programme détaillé sera donné à une date ultérieure.

Angleterre: Programme des bateaux comme en 1957, mais le programme détaillé sera donné à une date ultérieure.

Danemark: Une croisière sera faite par le "Dana" dans les eaux des Féroë-Groënland Est et Ouest à partir de la fin de mai jusqu'à la fin d'août; l'"Adolf Jensen" et "Immanuel" travailleront durant la grande partie de l'année dans les eaux côtières du Groënland Ouest.

Ecosse: L'"Explorer" continuera d'effectuer des travaux dans les eaux des Féroë, de l'Islande et du Groënland Est comme en 1957; un programme détaillé sera communiqué à une date ultérieure.

France: Même programme qu'en 1957.

Islande: Avec l'assistance de chalutiers affrétés, les bateaux "Ægir" et "María Júlía" iront effectuer les mêmes travaux qu'en 1957, spécialement en ce qui concerne les recherches sur le sébaste.

Norvège: Les bateaux de recherche "G. O. Sars" et "Johan Hjort" effectueront des travaux durant toute l'année, assistés par des bateaux affrétés. Le programme sera donné à une date ultérieure.

URSS: Les travaux de recherche seront poursuivis dans la Mer de Norvège, la Mer de Barentz etc. comme autrefois.

Réunion des Experts du Sébaste du Comité des Mers Nordiques Lointaines

Au cours de la réunion du Comité des Mers Nordiques Lointaines, le jeudi 3 octobre 1957, M. WIMPENNY propose que les experts du sébaste, attachés au CIEM, se réunissent afin de traiter les divers problèmes relatifs aux recherches sur le sébaste. Le Président du Comité demande au Dr. MAGNÚSSON d'organiser une telle réunion. La réunion s'est tenue le jour suivant. MM. les Drs. MAGNÚSSON, KOTTHAUS, LAGUNOV, RASMUSSEN, TÅNING et M. BRATBERG sont présents. Des représentants de l'ICNAF, MM. les Drs. LUNDBECK et WALFORD, assistent également à la réunion.

Le Dr. WALFORD annonce aux membres du Comité qu'un symposium de l'ICNAF chargé d'étudier les problèmes de races des sébastes aura lieu à Copenhague au mois d'octobre 1959. Il est convenu, que le symposium aura lieu à Copenhague afin que l'on puisse profiter de l'incomparable collection de *Sebastodes* s'y trouvant; le symposium se tiendra au cours des quatre à cinq jours précédant immédiatement la réunion annuelle du CIEM, ce qui permettra à un nombre maximum de savants européens intéressés par le sujet d'y participer.

Le symposium sera pris en charge par l'ICNAF, et le CIEM sera officiellement invité à y participer.

Tous les savants qui travaillent sur le sébaste, ou sur des groupes étroitement apparentés à celui-ci (comme par example le *Sebastodes*), seront invités à participer à ce symposium, même si leur pays n'est pas membre de l'ICNAF.

Le Dr. LUNDBECK (correspondance par l'intermédiaire du Secrétariat de l'ICNAF) commencera sans délai à solliciter des participants, et à se procurer des documents et des matériaux, qui seront soumis à l'étude au symposium. Il demandera aux participants de préparer les contributions préalablement au symposium et le Secrétariat de l'ICNAF distribuera ces contributions aux autres participants.

Le symposium sera mené comme un "groupe de travail" de la même manière que les réunions de Biarritz et de Lisbonne, et ses buts seront de fixer nos connaissances actuelles, de formuler les problèmes exigeant une solution, de dresser des programmes de recherches permettant de résoudre ces problèmes et de diviser le travail parmi ceux qui étudient le sébaste atlantique.

Etant donné que les spécialistes du sébaste ne sont pas d'accord sur l'interprétation des otolithes, ils doivent s'efforcer de résoudre les divergences avant la fin du symposium. A cette fin, ceux qui s'occupent de la détermination de l'âge par la lecture des otolithes doivent récolter toutes les preuves qui pourront soutenir leurs interprétations, afin de les soumettre au symposium. On demandera à un jury composé de chercheurs impartiaux d'étudier ces épreuves, d'écouter les arguments et de rendre un verdict sur la possibilité d'accepter les arguments de l'une ou l'autre partie; ou bien, s'il juge qu'aucune des parties n'est suffisament convaincante, de décider des recherches à entreprendre pour aboutir à une évidence convaincante.

Des spécimens de toutes les éspèces connues, des types, des tailles et des âges, s'échelonnant de l'état larvaire aux plus grands adultes, seront soumis à la réunion pour comparaison. Ceux-ci comprendront des éspèces du Pacifique, que le Dr. WALFORD s'efforcera de récolter.

Le Dr. TEMPLEMAN prépare une carte montrant la distribution par éspèce, type, taille, profondeur etc.

M. KELLY correspondra avec les autres chercheurs afin d'élaborer une liste des mensurations et des numérations nécessaires aux études morphologiques, et dès que cette liste aura été acceptée, il la distribuera.

Le Dr. LUNDBECK sollicitera des contributions sur toutes les techniques d'identification des populations, comprenant les moyennes vertébrales, les taux de croissance, le mélanisme, les parasites, la sérologie, le parasitisme, la morphométrie etc.

Comité des Mers Nordiques Proches

Président: Dr. J. HULT

I. Compte-rendu

Le Président ouvre la séance en souhaitant la bienvenue aux membres et aux invités. La liste des membres est vérifiée. Le Rapport Administratif et les *Annales Biologiques* sont adoptés.

A la demande du Président du Comité Consultatif les questions suivantes sont débattues:—

1. Réorganisation des Comités. Etant donné qu'aucun accord unanime ne peut être obtenu, le Comité est d'avis que la question doit être considérée par le Comité Consultatif ou par un Comité *ad hoc* spécial.

2. Recommandation des membres cooptés en 1957 au Comité de Liaison.

Le Comité est d'avis que les deux recommandations ayant une grande importance il faudra agir en conséquence.

3. Standardisation d'une numération mathématique des forces dynamiques des populations. Le Comité approuve la recommandation stipulée dans la résolution adoptée par la réunion commune scientifique du CIEM, de l'ICNAF et de la FAO.

4. Mensurations des tailles des poissons. Le Comité pense qu'il est très important de mesurer la taille du

poisson d'après une méthode uniforme et il recommande que, si pour certaines raisons il n'est pas possible de mesurer la taille au centimètre le plus proche, la méthode de mensuration employée soit clairement indiquée dans le rapport. Le Comité recommande l'étude des avantages et désavantages de la détermination de la longueur totale et de la longueur à l'intersection de la fourche caudale des poissons.

Le Dr. P. Korringa est élu Président.

II. Communications

Les rapports suivants sont présentés et discutés:—

A. C. Simpson: "The spawning of plaice in the Irish Sea".

J. E. Shelbourne: "New evidence for a 'critical period' in the life of larval plaice".

M. Roessingh: "Problems arising from the expansion of the industrial fishery for the sand-eel *Ammodytes marinus* Raitt, towards the Dutch coastal area".

M. Roessingh: "Observations on the whiting, made by the Netherlands' Institute for Fishery Investigations".

Aa. J. C. Jensen: "Summary report on the whiting statistics presented at the ICES-meeting 1956".

L. K. Boerema: "Assessment of the effect of the mixed haddock-herring fishery in the North Sea".

J. Ancellin: "Résumé des observations faites dans la région du Banc Svinøy".

III. Programme de Travail

Quelques pays membres présentent des programmes de travail provisoires et les représentants des autres nations prendront leurs dispositions pour faire parvenir des copies de leurs programmes aussitôt que possible au Président qui les transmettra aux membres du Comité.

Le programme à longue échéance du Comité est à nouveau discuté et, bien que la question d'une réorganisation des comités ne soit pas encore résolue, le Comité attache une grande importance à avoir un programme plus précis, portant par exemple sur des recherches sur la plie, le lançon et le merlan, ce qui permettra une meilleure coordination des travaux du Comité.

IV. Recommandation

Les contributions présentées au Comité des Mers Nordiques Proches ont, pour une grande part, élargi notre connaissance du stock du merlan. Ce fait a cependant montré le besoin de travaux nouveaux. Le Comité des Mers Nordiques Proches recommande que de tels travaux soient exécutés par les bateaux de recherches et qu'ils soient coordonnés avec ceux fait par d'autres nations.

Comité des Mers Baltique-Belts

Président: Dr. Aage J. C. Jensen

I. Compte-rendu

Les recherches en cours sont discutées.

Des épreuves du Rapport Administratif et des *Annales Biologiques* sont soumises aux membres pour correction et approbation. La proposition d'une réorganisation des activités des comités etc. est soumise aux membres pour discussion.

Les méthodes employées pour mesurer les poissons sont débattues, et il est convenu qu'exception faite du hareng et du sprat la plupart des poissons seront mesurés d'après une ligne droite entre l'extrémité des lobes caudaux.

Les mesures au demi-centimètre ou au centimètre voisin sont discutées, et l'importance d'indiquer, dans chaque cas particulier, la méthode employée, est soulignée.

Le Dr. Aage J. C. Jensen est réélu Président.

II. Communications

Les rapports suivants sont lus et discutés:—

A. Głowińska: "Temperature and salinity conditions in the Bornholm and Gdansk Deeps during the period 1900—1957".

J. Krey: "The distribution of total phosphorus in the Baltic in August 1956".

K. Demel & Z. Mulicki: "The zoobenthos biomass of the southern Baltic".

III. Programme de Travail

Il est décidé de poursuivre le programme de l'année précédente pendant l'année à venir. La détermination du phosphate et du nitrate dans toutes les régions et aux différentes saisons sera étendue. Les marquages de morue et de hareng seront faits dans la plus large mesure. Il est décidé d'étudier la nourriture du saumon et le rôle que jouent le marsouin et la morue comme prédateurs du saumon. Des marquages plus étendus de la truite de mer seront faits afin de savoir si les mesures de protection nécessaires à la truite de mer doivent être internationales.

Il est décidé que, prélablement à la prochaine réunion, on discutera et fixera par correspondance la forme et le contenu du programme à longue échéanec du Comité.

IV. Recommandations

I. Au cours de la réunion scientifique, tenue à Bergen le 29 septembre 1957 préalablement à la réunion du Conseil, pour traiter l'amélioration des stocks de poissons démersaux dans la Baltique, on a discuté l'état actuel des stocks de morue, de plie, de carrelet, de limande, de turbot et de la barbue. Les participants s'accordent à penser que des mesures internationales de protection peuvent augmenter les prises commerciales par unité de pêche, et que les pêcheurs tireront profit d'une nouvelle convention de pêche pour la Baltique.

On s'est mis d'accord sur les propositions suivantes de protection:—

1. Pour quelques espèces les mesures internationales de protection seront différentes dans les parties est et ouest de la Baltique. La limite entre les deux secteurs sera une ligne entre Rügen et l'entrée sud du Sound ou bien la Scanie du sud.
2. La plie:— une taille-limite d'au moins 25 cm. dans la partie ouest;
   — une taille-limite d'au moins 23 cm. dans la partie est.
3. Le carrelet:— une taille-limite d'au moins 25 cm. dans la partie ouest;
   — une taille-limite d'au moins 21 cm. dans la partie est.
4. Le turbot:— une taille-limite d'au moins 30 cm. dans la partie ouest;
   — une taille-limite d'au moins 23 cm. dans la partie est.
5. La barbue:— une taille-limite d'au moins 30 cm. dans la partie ouest.
   La barbue:— une taille-limite d'au moins 23 cm. dans la partie est.
6. En ce qui concerne la limande les mesures de protection ne sont pas nécessaires.
7. Une période d'interdiction de pêche d'au moins deux mois pour les femelles de plies et de carrelets mûres et vidées.
8. La morue:— une taille-limite de 30 cm.
9. Les mailles des poches des chaluts démersaux doivent être de 80 mm. (ouverture des mailles).

Le Comité des Mers Baltique-Belts se rend compte du fait qu'une convention internationale concernant les mesures mentionnées ci-dessus pour la partie ouest de la Baltique serait également profitable pour la pêche dans les Belts et le Sound, si elles sont étendues à ces eaux, et il a en conséquence recommandé, que le Ministère des Affaires Etrangères Danois soit pressenti pour proposer une réunion aux représentants des administrations de pêche, des instituts de recherches et des organisations de pêcheurs de tous les pays de la Baltique. Le but de cette réunion est de discuter une convention internationale pour les Mers Baltique-Belts admettant les mesures indiquées ci-dessus. La réunion se tiendrait dans un lieu central d'un des pays membres.

II. Le Comité recommande que les documents présentés à la réunion scientifique spéciale pour améliorer le stock de poissons démersaux en Baltique ainsi que les documents présentés à la réunion commune des Comités des Mers Baltique-Belts et du Saumon et de la Truite soient publiés dans un volume particulier des *Rapports et Procès-Verbaux*.

Réunion Commune des Comités des Mers Baltique-Belts et du Saumon et de la Truite pour la discussion du problème du saumon dans la Baltique

Président: Prof. G. V. Nikolsky

I. Communications

Les communications suivantes sont lues:—

G. Alm: "Note regarding the salmon fisheries in the Baltic in recent years".

B. Carlin: "The Swedish rearing of salmon and their importance for the salmon fishery in the Baltic".

F. Chrzan: "The principles and protection of salmonoid fish in the Baltic".

La base biologique de la pêche du saumon et de la truite de mer dans la Baltique est discutée. Les participants s'accordent à penser que les stocks de poisson ainsi que la pêche profiteront des mesures de protection. Les diverses méthodes possibles sont discutées et les recommandations ci-dessous sont adoptées.

II. Recommandations

Il est recommandé:—

1. Que pour le saumon une taille minimum d'au moins 55 cm. soit internationalement adoptée.
2. Qu'une maille minimum des filets à saumon ainsi qu'une taille minimum des hameçons, correspondant à la taille minimum du saumon, soient internationalement adoptée.

3. Que soit demandé à chaque pays d'introduire une taille-limite aussi grande que possible pour la truite de mer et d'entreprendre l'élevage de ce poisson.
4. Qu'afin de protéger le stock et d'éviter l'"Overfishing", une fermeture saisonnière de la pêche du saumon soit internationalement établie.
5. L'élevage du saumon sur une vaste échelle ayant une importance vitale pour la continuation de la pêche de ce poisson en Baltique, que des dispositions soient prises pour permettre des discussions traitant la possibilité de contributions financiaires des pays ne s'occupant pas de ce travail aux pays qui l'ont entrepris.

Le Comité des Mers Baltique-Belts demande donc au Conseil de transmettre ces recommandations aux gouvernements intéressés.

Comité Atlantique

Président: Dr. J. Furnestin

I. Compte-rendu

La liste des membres du Comité est revisée. L'Italie, nouvelle venue au Conseil, sera représentée par le Professeur Maldura. Le Rapport Administratif est adopté. Les *Annales Biologiques* sont corrigées et le projet Hult/Wimpenny concernant les publications est adopté à l'unanimité. La question des modifications à apporter à la constitution des comités reste posée. Quant à l'uniformisation des méthodes de mensurations des poissons, il est admis que les chercheurs continueront à utiliser celles qui leur semblent les plus rationelles.

Le Dr. J. Furnestin est réélu Président.

II. Programme

Les questions d'ordre particulier étant traitées aux comités spéciaux (Scombriformes et Sardine), il appartient au Comité Atlantique de traiter des matières n'entrant pas dans le cadre des comités spéciaux ainsi que des sujets généraux permettant certaines synthèses. La colonisation des eaux septentrionales du domaine atlantique (dans les limites géographiques du Comité) par des espèces méridionales — lusitaniennes et subtropicales — a servi de plan général aux travaux du Comité. Un rapport de M. Lassarat sur la pêche de type indigène et la pêche de structure européenne et sur les espèces capturés en Côte d'Ivoire (Abidjan) a été présenté. De même une note préliminaire, avec carte, de M. Faure, sur la nature des fonds, la bathymétrie et les possibilités de chalutage du banc Porcupine (ouest de l'Irlande).

III. Communications

K. Demel: "Liste des espèces de la Mer du Nord qui ont été trouvées dans la Baltique méridionale à la suite des influx d'eau salée en 1947—48".

J. H. Fraser: "Planktonic evidence of recent changes in the environmental conditions in the north-east Atlantic".

F. Navarro: "Poissons rares sur les côtes d'Espagne".

A. E. J. Went: "Recent records of species of fishes rare to Irish coastal waters".

P. Desbrosses & G. de la Tourrasse: "Poissons rares signalés dans le Golfe de Gascogne et à l'entrée occidentale de la Manche depuis 1928".

L. Faure: "La première campagne 1957 du navire océanographique 'Président-Théodore-Tissier' ".

Comité des Pêches Comparées

Président: Dr. C. E. Lucas

I. Compte-rendu

Le Président ouvre la séance en souhaitant la bienvenue aux membres et aux invités. Tous les pays-membres, sauf un, sont représentés. Quelques modifications pour l'année à venir sont apportées à la composition du comité:— l'Islande (M. Jakobsson), le Portugal (Dr. Ruivo), la Suède (M. Otterlind) et l'URSS (M. le Prof. Nikolsky et M. le Dr. Treschev).

Quelques petites modifications sont apportées à l'Ordre du Jour pour permettre en particulier la discussion de certains sujets soumis au Comité par le Comité Consultatif et la présentation de communications préparées pour d'autres comités et se rapportant au programme de ce comité.

On note que le Rapport Administratif a été reçu et adopté à la réunion spéciale tenue par le Comité à Lisbonne le jeudi 30 mai. Le rapport de cette réunion de Lisbonne, communiqué par circulaire, est adopté avec les notes de la réunion tenue le même jour avec des membres du Comité de Recherches et Statistique de l'ICNAF, au cours de laquelle les problèmes de la pêche dont les intérêts sont communs aux deux organisations ont été débattus. Trois questions — s'étant posées au cours de ces réunions — concernant

la standardisation des techniques etc. dans l'Atlantique du Nord exigent une attention particulière. La Recommandation 1 (voir ci-dessous) est adoptée en ce qui concerne l'emploi des pièces de protection à la partie supérieure des culs de chaluts, et la Recommandation 2(a) et (b) sur la standardisation des mensurations et du classement des tailles de poissons est également adoptée. Il est décidé de faire connaître au Comité de Liaison les dispositions prises avec l'ICNAF concernant l'étude et la comparaison qui sont actuellement faites sur les jauges utilisées sur les deux côtés de l'Atlantique. Ce travail a été entrepris par M. le Prof. von Brandt pour le CIEM et par M. Medico pour l'ICNAF dans le but de trouver les meilleures méthodes à employer à l'avénir.

Le Comité reçoit aussi le rapport élaboré à sa demande par MM. Parrish et Beverton traitant les résultats de la réunion scientifique commune entre la FAO et l'ICNAF, tenue à Lisbonne du 27 mai au 3 juin. Ce rapport donne un résumé des aspects des comptes-rendus de la réunion commune, traitant pour la plupart des sujets se rapportant au programme du Comité des Pêches Comparées, et il est signalé, qu'un rapport plus général de la réunion a été préparé par le Président et distribué avec les rapports des réunions spéciales de ce Comité, à tous les membres du Conseil. Le Comité remercie vivement MM. Parrish et Beverton de leur travail de valeur, et il est décidé d'adopter le rapport et de le transmettre au Comité de Liaison, sous réserve de quelques corrections minimes. Parmi les communications le Comité note également l'exposé élaboré, suivant la demande du Comité, par le Prof. von Brandt sur la nature et les caractéristiques des fils des engins de pêche. Le Comité reconnaît, que cet exposé forme une base appropriée pour une meilleure compréhension du sujet, et le Prof. von Brandt est vivement remercié pour son assistance. Il est convenu, que cet exposé sera également transmis au Comité de Liaison.

Le grand nombre de communications faites par les membres du Comité et présenté tant à la réunion commune entre la FAO, l'ICNAF et le CIEM à Lisbonne, qu'au cours d'autres réunions, fait preuve des progrès considérables faits depuis la réunion de 1956. Des communications ont été reçues des membres de douze pays. La demande du Conseil et de la Commission Permanente de recevoir des informations plus amples et plus précises s'accroît cependant toujours, et au cours de la réunion, un plan de coordination des travaux parmi des groupes de pays traitant particulièrement les divers aspects du programme de ce Comité est soigneusement discuté (copie distribuée préalablement à la réunion). Quelques petites modifications sont apportées au plan, et la priorité est donnée à quelques uns des sujets. Après discussion il est unanimement décidé d'adopter le plan et de le soumettre à la prochaine réunion.

Les membres du Comité considèrent ensuite la meilleure façon de mettre en œuvre ce plan. Il est convenu qu'afin de maintenir la collaboration, un coorganisateur de chaque groupe sera nommé; il doit se tenir en contact avec les savants des pays intéressés à cette partie spéciale du plan, et avec le Président; le Président, de son côté, fournira au coorganisateur les copies du plan corrigé. Le but sera d'organiser le programme de chaque pays de façon que sa participation au plan commun s'accorde avec celle des autres pays, et que le maximum de renseignements soit disponible pour communication par circulaire aux membres avant la prochaine réunion. Le 1 septembre est choisi comme une date convenable, si elle permet de réaliser la distribution et de considérer d'une façon soigneuse les résultats obtenus.

Quatre sujets soumis au Comité par le Comité Consultatif, et qui ont mené aux Recommandations 3, 4 et 5 ci-dessous, sont débattus. Il est, cependant, décidé qu'il n'est pas nécessaire pour lors d'exprimer les points de vue sur la question d'une réorganisation des comités.

Finalement, la question d'une régularisation du champ d'activité des comités est considérée et la Recommandation 7 ci-dessous est approuvée.

Le Dr. C. E. Lucas est réélu Président.

II. Communications

Onze communications distribuées sont présentées et quelques exposés verbaux sont faits par le Dr. Roessingh. De nouveaux renseignements sur les facteurs de sélectivité sont contenus dans ces communications, et l'on note que dans celles-ci comme dans celles de Lisbonne les résultats récents correspondent, sauf quelques rares exceptions, aux résultats revus par le Comité *ad hoc* de la Commission Permanente. Un groupe de communications fournit des données utiles sur les méthodes de mensuration des poissons et la Recommandation 2 est, en conséquence, adoptée.

Le Comité entend avec intérêt le Dr. Roessingh parler d'un nouveau modèle de chalut fait pour pêcher les *Ammodytes* (Visserij-Niews, juillet 1957, 10). A la suite d'une discussion sur les renseignements obtenus sur l'emploi des pièces de protection à la partie supérieure des culs de chalut la Recommandation 1 ci-dessous est adoptée. Une discussion s'élève au sujet des deux communications des Profs. von Brandt et Cieglewicz, et la Recommandation 6 est adoptée.

Copies de toutes ces communications seront envoyées au Comité de Liaison pour étude. Au cours de la réunion on prend note du film de télévision sous-marine sur les poissons dans le chalut, film qui a été montré auparavant par le Dr. L. A. Walford (visiteur de l'U.S.A.).

J. A. Pope: "Estimates of fishing power".
A. von Brandt: "Net materials of synthetic fibres".
W. Cieglewicz & W. Stryzewski: "Selection of Baltic cod by cod-end of different materials".
G. Otterlind & G. Sellerberg: "Some notes on Swedish trawl experiments in the southern Baltic".
J. Zijlstra: "Mesh experiments with a herring trawl".
J. Messtorff: "Chafing gear (a short report of the use of chafing gear in Germany)".

D. V. Radakov & D. S. Nikolaev: "The behaviour of the young coalfish in aquarium with respect to the moving net trap in the presence of predators (the cod)".
B. B. Parrish & K. Barnett: "Comparisons between total length and fork length measurements of herring".
J. A. Pope: "Comparisons of total lengths and fork lengths of haddock".
J. A. Gulland & R. J. H. Beverton: "Some proposals on the requirements and presentation of data of fish population studies".
L. K. Boerema, K. H. Postuma, M. Roessingh & J. J. Zijlstra: "Opinions of the Netherlands' Institute for Fishery Investigations on the advantage and disadvantage of measuring fork length or maximum length of fish".

III. Recommandations

Le Comité des Pêches Comparées recommande:—

1. Que devant le danger latent, que les pièces protectrices à la partie supérieure des culs de chaluts puissent empêcher l'évasion des petits poissons, le CIEM prie les pays d'étudier la façon d'agir des engins protecteurs de tout genre, ce qui permettra de déterminer leurs effets sur l'évasion des poissons et, si possible, de développer des engins de remplacement permettant d'éviter de tels risques.
2. (a) Qu'on demande aux membres du CIEM de mesurer, comme le font maintenant les membres de l'ICNAF, la taille des poissons au centimètre le plus voisin ou bien, si ce n'était pas possible, de présenter les données sous cette forme.
   (b) Que l'ICNAF soit informé que pour le moment les poissons sont mesurés jusqu'à l'intersection des lobes caudaux dans seulement un pays membre du Conseil, et qu'en conséquence il n'est pas possible de recommander l'adoption de cette méthode aux membres. Il est cependant souligné, qu'il est nécessaire que les chercheurs indiquent toujours la méthode qu'ils ont employée en mesurant le poisson et qu'ils doivent accorder une importance particulière à l'exactitude de leurs mesures, au égard surtout aux différences de taille du poisson avant et après (*post mortem*) sa mort.
3. Que la recommandation du Comité Statistique, soumise à cette réunion, concernant le classement et la publication des données statistiques sur la taille et sur l'âge etc. des poissons de la région du Conseil soit appuyée.
4. Que le CIEM fasse une démarche auprès des pays membres en leur demandant de récolter des données et de faire un rapport sur les quantités de poissons des espèces protégées rejetées à la mer. De tels renseignements sont très importants pour la Commission Permanente, et des tableaux s'y rapportant doivent être établis et publiés par le Secrétariat.
5. Que les propositions, maintenant modifiées, faites à la réunion commune de la FAO, de l'ICNAF et du CIEM à Lisbonne, sur une numération standard des symboles mathématiques dans le domaine des forces dynamiques des populations soient adoptées par les membres du CIEM.
6. Qu'en rapport avec les expériences faites avec les mailles, les membres du CIEM soient priés de donner tous les détails sur la nature et les caractéristiques des fils employés.
7. Qu'il soit reconnu, que les études sur les effets de la pêche font partie du champ d'activité de ce Comité.

Comité des Poissons Gadoïdes

Président: M. G. Rollefsen

I. Compte-rendu

La liste des membres est vérifiée et quelques modifications sont notées. Le Rapport Administratif et les *Annales Biologiques* pour 1956 sont adoptés. Le Président demande aux membres du Comité d'étudier les points suivants:—

1. Le rapport du Dr. Lucas de la réunion commune, tenue à Lisbonne concernant la mesure de la longueur total ou de la longueur à l'intersection des lobes caudaux.
2. Les recommandations transmises au Comité Consultatif sur le besoin d'une prompte distribution des données de taille et d'âge, et de rapports sur la quantité de poissons des espèces protégées rejetés à la mer.
3. La proposition Hult/Wimpenny d'une réorganisation des comités avec les commentaires recueillis par le Dr. Went.

La discussion de ces trois questions est renvoyée à la deuxième réunion.

M. G. Rollefsen est réélu Président.

II. Communications

G. C. Trout: "The results of English cod tagging in the Barents Sea" (lue par Mr. Collett).
J. Jónsson: "Icelandic cod investigations in south-west and south-east Greenland waters in 1957".
J. A. Pope: "Comparisons of total lengths and fork lengths of haddock".
D. V. Radakov & D. Nikolaev: "The behaviour of the young coalfish in aquarium with respect to the

moving net trap in the presence of predators (the cod)".

USSR: "Bottom fishery in the Barents Sea" (lue par Dr. Marty).

La communication de MM. Radakov et Nikolaev est retirée, et la communication de M. J. Pope est transférée au Comité des Pêches Comparées. En outre, le Dr. U. Schmidt présente un rapport sur les études faites sur le colin en Allemagne.

III. Programme de Travail

Les pays intéressés poursuivront leurs programmes de recherche, et l'attention des membres est particulièrement attirée sur les programmes de marquages et sur l'importance qu'il y a à établir des contacts entre les travaux de recherche dans ce domaine.

IV. Considérations

Les membres du comité discutent ensuite les trois sujets mentionnées ci-dessus et arrivent aux conclusions suivantes:—

1. L'importance d'une prompte publication des données de taille et d'âge ainsi que des données sur les espèces protégées rejetées à la mer ressort avec évidence; il est cependant nécessaire de recevoir des avis sur la façon de récolter et de présenter ces données.
2. Quant à la réorganisation des comités, les membres du comité trouvent extrêmement difficile de proposer un système convenable. La question sera étudiée par un organisme spécial, établi dans le but de faire accorder le système des comités du CIEM avec les besoins actuels.
3. En ce qui concerne la mesure de la taille, les membres du comité ne sont pas à même de recommander une méthode particulière, et la question est donc transmise au Comité des Pêches Comparées.

V. Recommandation

Le Comité des Poissons Gadoïdes appuie vivement la demande du Comité de Liaison au Conseil d'une prompte publication des données de taille et d'âge pour toutes les espèces protégées par la Commission Permanente, ainsi que des données sur les quantités de poissons rejetés à la mer, et il est recommandé que des démarches soient faites pour obtenir l'avis de la Commission Permanente pour les détails de la présentation de ces données.

Comité du Hareng

Président: M. Olav Aasen

I. Compte-rendu

La liste des membres est vérifiée et quelques modifications sont apportées à la composition du comité. Le Rapport Administratif et les *Annales Biologiques* sont présentés et adoptés. Au cours de la réunion les membres exposent leurs programmes de travail pour l'année prochaine.

II. Communications

K. H. Postuma: "The vertical migration of feeding herring in relation to light and the vertical temperature gradient".

Veikko Sjöblom: "On the causes of the poor catches of Baltic herring in the summer of 1956 and their causal factors on the Finnish coast".

R. E. Craig: "A relation between herring-drifter catches and hydrographic conditions".

B. B. Parrish & K. Barnett: "Comparison between total length and fork length measurements of herring".

Ju. Ju. Marty: "On the dynamics of marine herring populations and principal conditions for optimal catches".

D. H. Cushing: "The effect of fishing on the herring of the southern North Sea".

D. H. Cushing: "The catches per unit effort of the Bank stock and the Downs stock of herring".

O. Aasen, D. H. Cushing, & K. Popp Madsen: "ICES Herring Tagging Experiments at the Bløden Ground, Parts I & II".

Olav Dragesund: "Estimation of the Norwegian winter herring population based on tagging experiments".

Á. Friðriksson: "Investigations on the north coast herring in Iceland, 1957".

M. N. Lishev: "Study of population dynamics of Salaka (Baltic herring) in the central part of the eastern Baltic".

M. N. Lishev: "Some data to estimate the success of the operation and the selectivity effect of the eastern Baltic herring trawl fisheries".

III. Recommandations

1. Réorganisation des Comités. Le Comité du Hareng tient à la continuation du Rapport Administratif ainsi qu'à la section dans les *Annales Biologiques*.
2. Numération Mathématique. La recommandation passée à la réunion à Lisbonne est appuyée par le Comité du Hareng.
3. Le Projet de Transplantation Antarctique. Le Comité du Hareng serait fortement intéressé par la transplantation du hareng dans l'Antarctique, mais la majorité des pays membres ne seront pas à même d'y participer.

4. Rejet des Poissons à la Mer. Les pays membres sont priés de fournir des données sur le rejet à la mer des espèces protégées.

   Les Données sur l'Age et sur la Taille. Il est recommandé que des données sur la taille et sur l'âge des harengs au stade de maturité ainsi que des numérations vertébrales par mois et par secteurs statistiques (sur une base régionale) soient incluses aux *Statistical News Letters*.
5. Programme de Marquage du Hareng. Le Comité du Hareng recommande que, comme avant, un crédit soit disponible pour continuer les expériences de marquage. Afin de travailler sur les résultats à Copenhague, il a été décidé de prendre contact avec M. Gulland (Lowestoft), M. Andersen (Copenhague) et M. Aasen. On demandera à ces Messieurs de faire un rapport au Groupe de Travail dans les meilleurs délais. Sur la base de ce rapport on fixera les détails du programme de marquage pour l'année prochaine.
6. Eaux Nordiques. Il a été décidé que la coopération commencée l'année dernière dans les eaux nordiques sera poursuivie.

Comité de la Sardine

Président: Dr. J. Cuesta

I. Compte-rendu

Après quelques mots de bienvenue le Président ouvre la séance. La composition du Comité est modifiée avec l'inclusion du Professeur Meyer-Waarden d'Allemagne, de M. Percier de France, du Professeur Maldura d'Italie et du Dr. Vilela (en remplacement du Dr. Ramalho) et M. Pinto du Portugal.

Un exposé est fait sur les travaux à réaliser l'année prochaine sur la sardine: par le Dr. Cushing sur celle des côtes de Cornouailles et de Bretagne, par le Dr. Furnestin sur la localisation des bancs de poissons par l'echo-sondeur et sur la ponte (œufs planctoniques) sur la côte française, et sur l'écologie et la biologie de cette espèce en Mauritanie, — par le Dr. Krefft sur la sardine pêchée avec le hareng en Mer du Nord, par le Dr. Vilela sur la biométrie et la ponte de la sardine dans les eaux du Portugal, et par le Dr. Cuesta sur le même programme dans le reste de la péninsule ibérique et les Iles Canaries. Des études sur l'anchois seront faites par la France et par l'Espagne.

Du même le Dr. Dannevig expose le projet de travaux à réaliser par la Norvège sur les races, ponte et lieux de ponte du sprat. Le Dr. Furnestin propose une intensification des observations sur la mortalité des œufs planctoniques de la sardine et il émet le vœu, que les travaux sur cette espèce soient intensifiés par les laboratoires des côtes anglaises et irlandaises.

Le Dr. J. Cuesta est réélu Président.

II. Communications

R. Moal: "Etude comparée de quelques caractères de *Sardina pilchardus* sur la côte occidentale d'Afrique".

J. Cuesta: "Observations biologiques sur la sardine (*S. pilchardus* Walb.) à Santander en 1957".

Comité des Poissons Scombriformes

Président: Dr. H. Vilela

I. Compte-rendu

Le Dr. Furnestin annonce aux membres qu'à la demande du Président du Conseil il présidera la séance en attendant l'élection d'un nouveau Président du Comité.

La liste des membres est corrigée. Comme nouveaux membres français sont indiqués MM. Vincent-Cuaz et Percier. La Norvège augmente sa représentation avec l'entrée de M. J. Hamre. Le Dr. Vilela remplace le Dr. Ramalho. L'Espagne augmente également sa représentation avec l'entrée de M. J. Cuesta. Comme membres de l'Italie sont désignés le Professeur Maldura et M. Scaecini. Le Rapport Administratif est présenté et adopté. Le Dr. Furnestin fait remarquer la grande importance de l'étude des scombriformes. Au point de vue de la recherche tous les membres sont d'accord sur l'importance du marquage et de la biologie des espèces telles que les thons et les maquereaux. Deux communications sont annoncées, l'une de M. Vincent-Cuaz, l'autre de M. Doutre.

Le Dr. H. Vilela est élu Président à l'unanimité.

II. Communications

Six communications sont présentés et discutés:—

L. Vincent-Cuaz: "L'albacore *Neothunnus albacora* (Lowe) le long des côtes de Mauritanie".

J. Doutre: "Déplacement des lieux de pêche de la flotille thonière basée à Dakar".

H. Revheim: "Some results of mackerel-tagging in Norway".

J. Hamre: "Norwegian tuna-investigations".
R. Letaconnoux: "Récentes observations sur la pêche de *Germo alalunga* Gmelin".
R. Kändler: "Some remarks on age determination of mackerel in the North Sea".

III. Programme de Travail

Allemagne: Etudiera longueur, maturité, âge (otolithes) du maquereau et continuera l'étude du thon.

Belgique: Continuera les observations sur le maquereau.

Espagne: Etudiera la biométrie des thons (*Th. thynnus* et *Germo alalunga*).

France: Marquage du maquereau en Mer Celtique et Mer du Nord. Recherches écologiques sur *Th. thynnus*, *Katsuwonus pelamys*, et sur *Pelamys sarda* du Golfe de Gascogne. Recherches sur le germon (*Germo alalunga*) entre les Açores, le Portugal et le Golfe de Gascogne. Etude de l'albacore (*Neothunnus albacora*) entre Dakar et le Congo.

Norvège: Age, maturité, longueur, marquage du maquereau du nord de la Norvège et en Skagerak. Etude de la pêche de *Th. thynnus* à la côte ouest.

Portugal: Bio-écologie des thons (*Neothunnus albacora*) entre les Açores, Madère, le Cap Vert et la Guinée.

Comité du Saumon et de la Truite

Président: Dr. A. E. J. Went

I. Compte-rendu

Le Président souhaite la bienvenue aux membres et aux invités. La liste des membres est revue et les modifications nécessaires y sont apportées. Les membres présentent des rapports sur l'avancement des travaux en cours en 1957, et le programme de travail pour 1958 est étudié. Après une discussion sur les différents aspects des recherches sur le saumon et la truite, les membres s'accordent à tenir un symposium, qui précédera immédiatement la prochaine réunion du Conseil. Après avoir étudié le mémorandum Hult/Wimpenny ainsi que le mémorandum du Président du Comité, les membres recommandent que le Comité du Saumon et de la Truite s'occupe, comme auparavant, de tous les problèmes relatifs au travail du Comité dans un seul rapport contenant, si le besoin s'en fait sentir, des renvois au travail sur le saumon de la Baltique, dont certains aspects pourront être traités avantageusement par le Comité des Mers Baltique-Belts.

Une réunion commune du présent Comité et du Comité des Mers Baltique-Belts s'est également tenue et fera l'objet d'un rapport du Président du Comité des Mers Baltique-Belts.

Le Professeur G.V. Nikolsky, d'URSS, est élu Président, le Dr. Went étant arrivé à la fin de son mandat.

II. Communications

W. M. Shearer: "Some notes on salmon and sea trout, transportation experiments, River Dee, Aberdeenshire, 1955 and 1956".
A. Swain: "Factors affecting the downstream migration of salmon and sea trout". (Résumé.)
E. M. Malikova: "Biochemical estimation of young salmon in the transition stage before migration to the sea and of smolts in a period of detention in fresh water".
S. Zarnecki: "The amount of roe obtained by artificial fertilization from the winter form of sea trout (*Salmo trutta*) spawning in the affluents of the Upper Vistula". (Résumé.)
A. V. Holden: "The use of artificial fertilizers to improve the growth of brown trout".
S. Zarnecki: "The phenomenon of extraordinary growth of brook trout in the lochs in the Tatra Mountains". (Résumé.)
S. Zarnecki: "The age and growth of seasonal populations of sea trout entering the River Vistula in autumn 1951". (Résumé.)
S. Zarnecki: "The devouring of own eggs by sea trout spawners during the spawning period".
I. I. Lagunov & V. V. Azbelev: "On the Tuloma fishway operation and the condition of salmon stock in the Tuloma River".
Jaime de Foxá: "L'étude des espèces anadromes comme facteur d'exploration des mers".

III. Programme de Travail

Le Comité décide de poursuivre le marquage des saumons et des truites de mer à tous les stades, et de faire une comparaison des résultats obtenus par l'emploi de marques de types divers.

IV. Recommandations

Le Comité du Saumon et de la Truite recommande:

1. Que le Conseil demandera aux pays participants d'envoyer à Copenhague des plans et des spécifications de tous genres d'échelle à poissons utilisées avec succès dans les différents pays, et que ces plans etc. soient examinés par un sous-comité du Comité du Saumon et de la Truite pour envisager la possibilité de rédiger un manuel sur ces installations.

2. Qu'un Symposium soit organisé pour le dimanche, précédant immédiatement la réunion d'ouverture du CIEM en 1958. Les sujets à étudier seront les suivants:—

(i) l'efficacité de la libération, dans des conditions différentes, du frai et des alevins de saumon (parr et smolts) ainsi que de la truite de mer.
(ii) le marquage et son éfficacité pour le saumon et la truite.

Le Comité exprime l'espoir qu'un compte-rendu du travail canadien pourra être donné à ce Symposium.

Comité des Mollusques et Crustacés

Président: Dr. H. A. Cole

I. Compte-rendu

Le Président souhaite la bienvenue aux membres et quelques modifications sont apportées à la composition du Comité. A l'avenir l'Islande sera représentée au Comité. L'importance d'une prompte présentation et distribution des programmes de recherches permettant une coordination est soulignée par le Président. Les rapports sur les travaux effectués seront présentés sous la forme préscrite.

Le Rapport Administratif et les *Annales Biologiques* sont présentés et adoptés sous réserve de quelques petites corrections.

II. Recherches Internationales sur les Stocks de Homard au Sud-Ouest de l'Angleterre

Le Président annonce aux membres qu'une réunion non-officielle s'est tenue au mois d'octobre 1956 à Copenhague entre les représentants de l'Angleterre, de la France, de l'Ecosse et de l'Irlande, et dont le but était de discuter l'utilité qu'il y aurait à établir un programme commun de recherche dont le but final serait de définir les mesures de conservation les plus appropriées pour les stocks de homard au sud-ouest de l'Angleterre. Ces stocks sont d'une grande importance pour les pêcheurs des quatre pays et dans une certaine mesure exploités en commun. Plus tard, au mois de janvier 1957, une autre réunion présidée par le Président du Comité et à laquelle ont assisté des experts de chaque pays, s'est tenue à Londres.

Un programme de travail détaillé est discuté et adopté, et il est à prévoir que ce programme occupera 3 à 5 ans. Des rapports préliminaires sur les travaux effectués sont présentés par le Dr. Went, M. Desbrosses et le Président.

III. Contrôle Sanitaire — Standardisation des Procédés

Le Président souligne que, quand cette question a été discutée il y a quelques années, il a été convenu, qu'afin d'obtenir de l'uniformité dans la méthode d'examen des coquillages, il fallait avant tout faire une étude comparative des méthodes employées dans les divers pays membres. Le Dr. Korringa annonce que le Dr. Grijns a élaboré un rapport comparant les méthodes hollandaises et anglaises, et il a conclu que la méthode anglaise est supérieure à la méthode hollandaise. Le Dr. Reynolds et M. Wood ont établi des comparaisons entre les méthodes anglaises, canadiennes et irlandaises et ils en ont conclu, que la méthode anglaise est applicable tant aux coquillages qu'à l'eau de mer. Il reste à prendre connaissance des rapports de la Belgique, de la France et de l'Angleterre. Comme l'exportation et l'importation des coquillages se sont développées, il est de plus en plus important d'arriver à une parfaite compréhension de la valeur relative des différentes méthodes et étalons utilisés par les pays membres.

IV. Visite de Centres Norvégiens de Production Ostréicoles

Il est annoncé que grâce à l'amabilité du Dr. B. Rasmussen et du Professeur Brattström six membres du Comité des Mollusques et Crustacés ont fait une courte excursion, au moyen du bateau de recherche de l'Université de Bergen, aux centres de production ostréicoles. L'excursion a été guidée par M. P. A. Soleim du "Bergen Fishery Museum" et par M. N. B. Antonisen de la "Society of the Improvement of Norwegian Fisheries". Cette excursion a été couronnée de succès. On a pu ainsi mieux connaître les techniques norvégiennes, et le Comité en exprime sa gratitude.

Le Dr. H. A. Cole est réélu Président.

V. Communications

R. Th. Roskam: "Gaffkaemia, a contagious disease in *Homarus vulgaris*".

L. Faure: "Sur la présence de *Nicothoë astaci* chez les homards de diverses origines".

P. Korringa: "Risks involved in lobster storage".

F. A. Gibson: "The fishing of *Nephrops* in Ireland".

H. J. Thomas: "Creel selectivity in the capture of lobsters and crabs".

G. Dannevig: "Rearing experiments with lobster larvae".

A. C. Simpson: "The growth and time of moulting of lobsters on the coast of North Wales".

H. J. Thomas: "Some seasonal variations in the catch and stock composition of the lobster".

L. Vincent-Cuaz: "Les langoustes roses de Mauritanie, *Palinurus mauritanicus* Gruvel".

J. P. Jensen: "The relation between body size and number of eggs in marine Malostraca".

J. P. Jensen: "The biology of the Baltic prawn (*Leander adspersus*) in Danish waters".

G. Høpner Petersen: "The species of *Cardium* in Danish estuaries".

R. H. Baird: "Measurement of condition in oysters and mussels".

B. Havinga: "The settling of mussel seed in the Dutch Waddensea".

P. E. Lubet: "Répartition de *Mytilus galloprovincialis* sur les côtes du sud-ouest de la France, quelques particularités de leur biologie".

G. D. Waugh: "Nanoplankton and oyster growth in estuaries".

J. le Dantec: "Le Bassin d'Arcachon; condition de milieu et gisements naturels d'huîtres".

P Lubet & J. le Dantec: "Recherches sur le cycle sexuel de *Gryphaea angulata* Lmk. dans le Bassin d'Arcachon. (Note préliminaire)".

P. J. Warren: "A device for rapid single-handed measurement of shellfish".

M. Boury & J. Borde: "Méthodes d'examen bactériologiques de l'eau de mer et des coquillages. Essais comparatifs".

B. Rasmussen: "Note on the Norwegian fishery for *Nephrops* in the Skagerak".

S. D. Maeyer-Cleempoel & A. Lafontaine: "Note préliminaire sur l'étude des méthodes à appliquer pour le contrôle bactériologiques des huîtres et sur le problème de leur epuration".

P. C. Wood: "Further studies of methods and standards for the biological examination of shellfish".

Le Dr. Korringa projette des photographies sur l'industrie moulière espagnole.

VI. Recommandations

1. Le Comité des Mollusques et Crustacés recommande la continuation de l'étude comparative, des méthodes d'examen bactériologiques des coquillages et des formes adoptées pour le contrôle sanitaire dans les pays membres.
2. Le Comité recommande l'étude des causes de la faiblesse et des pertes chez le homard, surtout en ce qui concerne la présence de *Gaffkya*.
3. Le Comité recommande que, dans le but de trouver des mesures de conservation appropriées, des études soient faites sur les stocks de *Nephrops*, pêchés par les pays membres.
4. Le Comité est d'avis qu'aucune modification dans le statut ou dans les fonctions de ce Comité n'est nécessaire, et qu'il doit continuer à présenter un Rapport Administratif séparément et à publier toutes les communications utiles dans une section spéciale des *Annales Biologiques*, si la publication de celles-ci est poursuivie (voir ci-dessous).
5. Le Comité des Mollusques et Crustacés recommande de considérer l'avantage qu'il peut y avoir à cesser la publication des *Annales Biologiques* et à destiner les fonds ainsi économisés à la publication annuelle d'un numéro supplémentaire du *Journal du Conseil*.

Comité Hydrographique

Président: Dr. G. Böhnecke

I. Compte-rendu

La liste des membres est vérifiée. De nouveaux membres sont nommés: le Prof. M. Picotti pour l'Italie, M. J. A. van Duijnen Montijn, second membre pour les Pays-Bas, M. K. Zagrodzki pour la Pologne et le Dr. H. Vilela pour le Portugal. Après quoi, le Lt.-Cdr. Lumby informe le Comité qu'il compte se retirer prochainement, et qu'en conséquence, l'Angleterre sera représentée, l'an prochain, par M. A. J. Lee.

Le rapport administratif du Comité pour 1956 est adopté. Le rapport de l'Hydrographe, concernant le travail effectué par le Service Hydrographique depuis la dernière réunion, est adopté.

A ce propos, le Président attire l'attention sur l'extension des cartes hydrologiques synoptiques à couvrir aussi le Kattegat, les Belts et la Baltique occidentale, et le Dr. Carruthers exprime son regret de ne plus pouvoir désormais fournir les données sur les courants, qui avaient jusqu'alors été utilisées pour les cartes synoptiques.

Le Comité Hydrographique exprime sa satisfaction pour le travail effectué par le Service Hydrographique du Conseil.

Le Sous-Comité pour la préparation des cartes de moyennes pour les températures et salinités (Président: Lt.-Cdr. Lumby) présente son rapport. La préparation des fiches perforées ayant pris plus de temps que prévu, le Sous-Comité ne s'est pas encore réuni pour décider du travail futur. Il est donc proposé que les fonds destinés à une réunion au cours de l'année financière 1956/57 puissent être utilisés pour une réunion au début de la nouvelle année financière. La recommandation 1 est adoptée.

Le Lt.-Cdr. Lumby demande a être remplacé dans le Sous-Comité sus-mentionné par M. H. Hill de Lowestoft. Le Prof. Dietrich accepte la présidence du Sous-Comité.

Le Sous-Comité provisoire de mécanisation de l'index des données hydrologiques du Conseil (Président: Lt.-Cdr. Lumby) fait son rapport.

Plusieurs membres soulignent l'importance qu'il y aurait à transférer le fichier sur des fiches perforées.

Le rapport du Sous-Comité provisoire (voir Appendice I) est adopté et il est décidé de remplacer le Sous-Comité provisoire par un Sous-Comité officiel composé par: MM. Hela (Président), Dietrich, van Duijnen Montijn, Midttun et Smed.

La recommandation 2 est adoptée.

Le Sous-Comité pour l'étude des méthodes standard de détermination de la salinité présente son rapport (Président: M. HERMANN). Ce rapport est adopté et le Comité Hydrographique exprime ses remerciements à M. HERMANN et à son Sous-Comité pour leur travail. Puis le Comité exprime le vœu de voir ce rapport publié par le Conseil.

Il est décidé que ce Sous-Comité continuera à faire fonction de Comité de liaison avec le Comité spécial de recherche océanographique (SCOR) afin de conserver d'étroits contacts avec le développement des instruments.

Le Sous-Comité de l'année géophysique internationale (AGI) 1957—1958 (Président: Dr. BÖHNECKE) présente son rapport.

Le rapport (voir Appendice II) est adopté, ainsi que la recommandation 3.

Sur sa demande, le Lt.-Cdr. LUMBY est remplacé dans ce Sous-Comité par M. A. J. LEE.

Le Sous-Comité pour l'étude de la possibilité de récolte et de publication des données fournies par le bathythermographe (Président: Prof. GROEN) présente son rapport.

Le rapport (voir Appendice III) est adopté.

Le Comité consent à ce que le Sous-Comité se désagrège, sur sa demande, et le Président remercie le Sous-Comité pour son travail.

Le Sous-Comité de recherche sur la remontée d'eau profonde sub-arctique le long de la crête d'Islande-Féroë (Président: Dr. TAIT) présente son rapport. Le rapport (voir Appendice IV) est adopté.

Le Sous-Comité de coordination des recherches hydrologiques en Mer Baltique (Président: Prof. HELA) fait son rapport. Le Sous-Comité a préparé une réunion des parties intéressées en mars 1957 à Helsinki, la Première Conférence des Océanographes Baltes où un rapport sur les mesures nécessaires et désirables à prendre pour promouvoir des études hydrologiques en Mer Baltique ait été préparé.

Le rapport du Sous-Comité est adopté et il est décidé que le Sous-Comité devra agir comme comité de liaison entre les Conférences des Océanographes Baltes et le Comité Hydrographique.

Le Prof. LEDNEV est remplacé sur sa demande dans le Sous-Comité sus-mentionné, par le Prof. PREOBRAGENSKY ou, à son défaut, par le Dr. FEDOSOV.

Un exposé des observations habituelles faites régulièrement par les pays membres est distribué et adopté.

Des plans de travaux hydrologiques par les pays membres en 1958 sont présentés. Il est décidé que ces plans seront, après révision, collectés par le Service Hydrographique du Conseil avant la fin de 1957 et mis en circulation.

Le Président attire l'attention sur les projets de réorganisation des comités du Conseil. Ils pourraient entraîner une nouvelle rédaction des programmes hydrologiques à long terme dans les différentes régions.

Le Dr. COOPER, sur la demande du Président, fait un rapport sur les unités d'océanographie chimique qui ont été discutées à la réunion de l'AIOP (Association Internationale d'Océanographie Physique) à Toronto. L'AIOP a créé un Comité chargé de discuter cette question et de présenter un rapport à l'AIOP qui se réunira en 1960.

Il est demandé au Dr. COOPER, Président de ce Comité de l'AIOP, d'être l'agent de liaison entre le Comité AIOP et le Comité Hydrographique. Le Dr. COOPER accepte.

Le Prof. HELA présente un rapport sur le travail effectué en juillet 1957 en Mer de Barentz et au nord de Svalbard par le navire de recherche finnois "Aranda".

Le Président, au nom des membres du Comité Hydrographique exprime son profond regret de voir le Lt.-Cdr. LUMBY quitter le Conseil et le remercie pour ses importantes contributions au travail du Comité Hydrographique depuis de nombreuses années.

Le Dr. BÖHNECKE est réélu Président à l'unanimité.

II. Communications

Les travaux suivants sont présentés:—

J. EGGVIN: "Some results of recent oceanographic researches in the Norwegian Sea". Discussion: M. KETCHUM.

J. JOSEPH: "The turbidity in the Irminger Sea in summer 1955 and its hydrographic background". Discussion: MM. JERLOV, LAEVASTU, MOSBY, GROEN, et SIMPSON.

G. DIETRICH: "Oceanographic problems to be investigated on the research cruises of 'Anton Dohrn' and 'Gauss' during the International Geophysical Year 1957—58". Discussion: MM. MOSBY, CARRUTHERS et EGGVIN.

G. N. ZAITSEV: "Preparation of dynamic charts for seas with a complex pattern of tidal circulation (featuring the Norwegian Sea)". Discussion: MM. MOSBY, JOSEPH, LEDNEV, FJELDSTAD, KETCHUM, et le Président.

M. PICOTTI: "La participation de l'Italie en l'Année Géophysique Internationale. Contribution océanographique".

M. PICOTTI: "Nouveaux types d'hydrobouteilles en verre et leur emploi en océanographie et en limnologie". Discussion: Dr. CARRUTHERS.

J. H. STEELE: "A hypothesis about discontinuity layers". Discussion: MM. FJELDSTAD et JOSEPH.

R. E. CRAIG: "A sea drift-indicator and observations in Scottish waters". Discussion: MM. CARRUTHERS, LUMBY, KULLENBERG et HELA.

J. N. CARRUTHERS: "The simple measurement of deep bottom currents including any cold water creep over Arctic/Atlantic ridges". Discussion: MM. KULLENBERG, HERMANN, EGGVIN, DIETRICH, HELA et le Président.

I. M. SOSKIN: "Long-term variations of the hydrographical characteristics in the Baltic". Discussion: MM. DIETRICH, KULLENBERG et le Président.

K. A. Sedyh & R. N. Sarynina: "Hydrological conditions in the Barents Sea in 1956". Discussion: MM. Hela et Corlett.

P. Groen: "Note on wind-driven currents in the North Sea and their influence on water levels". Discussion: MM. Joseph et Kullenberg.

Prof. M. Picotti projette un film: "Croisière Adriatique".

III. Recommandations

1. Préparation des cartes de moyenne.

   Il est recommandé que les fonds (2.500 c.d.) alloués pour une réunion du Sous-Comité pour la préparation des cartes de moyenne, au cours de l'année financière 1956—1957, mais non utilisés pendant cette année, soient réservés à une réunion à Hambourg ou Copenhague suivant la nécessité, au début de la nouvelle année financière.

2. Mécanisation de l'index des données hydrologiques.

   Il est recommandé de mécaniser l'index des données hydrologiques du Conseil et d'utiliser le système IBM à cette fin.

   La prévision de dépense pour le Conseil s'élève à 8.300 c.d. avec une dépense additionnelle d'environ 2.000 c.d. pour la première année.

   De plus, il est recommandé de prévoir des provisions pour une réunion du Sous-Comité pour la mécanisation de l'index des données hydrologiques. La dépense prévue est d'environ 3.000 c.d.

3. Année géophysique internationale.

   Il est recommandé, dans le but d'obtenir un quadrillage plus serré des stations de recherche sur le "Front polaire" et pour éviter les double-emplois, de modifier les sections dans certaines régions. Les positions des sections pourraient être discutées par les membres intéressés.

   De plus, il est recommandé que tous les pays membres fassent connaître au Service Hydrographique du Conseil les dates exactes de départ et de retour de leurs navires de recherche qui prendront part aux travaux de l'AGI.

APPENDICE I

Rapport du Sous-Comité Provisoire pour la Mécanisation du Fichier des Données Hydrologiques du Conseil

Par J. R. Lumby

1. Références

Le Sous-Comité pour la préparation des cartes de moyenne de salinité et de température de surface, composé de MM. Lumby (Président), Dietrich, Groen et Smed, a étudié l'utilisation des moyens mécaniques pour le classement des données hydrologiques récoltées par le CIEM.

2. Situation générale

Chaque année, le Service Hydrographique reçoit à Copenhague environ 50.000 groupes d'observations hydrologiques faites par les membres du CIEM. Elles sont reportées à la main sur des fiches qui servent de fichier des observations et sont utilisées pour la préparation du *Bulletin Hydrographique*. Ce fichier continue à s'accroître de telle sorte que l'emploi de cette collection de documents ayant de la valeur tant sur le plan scientifique que pratique, s'avère de moins en moins pratique. Le classement des observations sur fiches perforées de type IBM a été reconnu valable dans de nombreuses branches scientifiques. Par exemple, ce système est très largement utilisé pour la météorologie maritime, et le Hydrographic Office, Washington, l'utilise pour les données hydrographiques depuis plusieurs années.

3. Proposition pour la mécanisation

La mécanisation du fichier des données hydrologiques du Conseil est donc proposée. Ce volume des données reçues chaque année ne cesse de s'accroître et le Service Hydrographique a déjà atteint la limite de ce qu'il lui est possible de manipuler. Le principal avantage de la mécanisation est que l'on pourrait manipuler ce grand volume de documents sans accroissement correspondant du personnel. De plus, l'étude de certains problèmes serait facilitée et remarquablement plus rapide. Des copies des documents peuvent être facilement obtenues puisqu'on pourrait recopier mécaniquement les fiches perforées.

4. Procédure

La procédure indiquée ci-dessous est suggérée:—

(a) *Fiches.* Il est recommandé d'employer le système IBM avec les fiches adaptées suivant les besoins du Conseil. Une copie de la fiche n° 780564 est jointe à ce rapport ainsi que la fiche n° 780565 sur laquelle on a prévu certaines informations supplémentaires, c'est-à-dire observations météorologiques et observations sur la mer et la houle. Il est recommandé, tout d'abord, de prévoir l'enregistrement de la salinité

MASTER — CARD

U. S. NAVY HYDROGRAPHIC OFFICE

OCEANOGRAPHIC DATA CARD 3-49

DETAIL CARD

U. S. NAVY HYDROGRAPHIC OFFICE

OCEANOGRAPHIC DATA CARD 3-49

avec trois décimales. Ensuite, qu'à l'exception de l'oxygène, les données chimiques et les mesures de courants (colonnes 54 à 75 de la fiche 780564) ne soit pas notée immédiatement; l'enregistrement doit seulement indiquer qu'il existe des données au Service Hydrographique; cela n'empêche pas l'enregistrement ultérieur des données numériques.

(b) *Réception des listes de données.* Pour simplifier le travail, il est instamment recommandé à toutes les institutions d'envoyer leurs observations après les avoir mises dans le même ordre que les colonnes des fiches perforées.

(c) *Perforation des cartes.* Les données seront enregistrées sur cartes aussitôt que les listes seront reçues par le Service Hydrographique. Le temps demandé par la perforation des cartes ne sera guère différent de celui employé à transcrire à la main les données sur des fiches.

Pour perforer les fiches, le Service Hydrographique devra être équipé d'une machine perforeuse avec possibilité d'impression, de telle sorte que les données puissent être reproduites sur les cartes perforées de la même façon que sur une fiche ordinaire. On suggère que les fiches pourraient être vérifiées visuellement par le personnel et non mécaniquement.

(d) *Triage des cartes perforées.* Un ensemble d'observations peut être trié par secteur et par date avec une machine trieuse IBM. Comme le triage de 50.000 fiches perforées ne prendra que quelques semaines, la location continuelle d'une telle machine ne serait pas économique. Il a été vérifié que d'autres institutions à Copenhague possèdent des trieuses IBM grâce auxquelles on pourrait faire ce travail. Après triage, les fiches peuvent être classées. Au lieu de fiches écrites à la main, le fichier consisterait en fiches perforées contenant les données sous forme lisible aussi bien que sous forme de trous faits dans les fiches.

(e) *Listes des données.* Les listes d'observations sur cartes perforées peuvent être faites mécaniquement avec la machine compteuse IBM. Mais, du fait qu'on peut cataloguer 50.000 fiches en quelques jours, il ne serait pas économique de louer continuellement une telle machine. Il est possible de s'entendre pour l'emploi d'une machine compteuse avec une autre institution de Copenhague qui en possède une.

5. Prix estimés

Les dépenses annuelles pour l'enregistrement des données hydrologiques et la copie automatique des fiches perforées sont estimées comme suit:—

1.	Location d'une machine perforeuse et imprimeuse IBM	5.000 c.d.
2.	Honoraires pour l'usage d'une trieuse IBM	1.700 –
3.	Honoraires pour l'usage d'une compteuse IBM	800 –
4.	50.000 fiches	800 –
		8.300 c.d.

Il faudra ajouter une somme initiale et unique d'environ 2000 c.d.

Il est bien entendu que pour les demandes impliquant l'emploi d'une machine, des honoraires seront imposés.

6. Bulletin Hydrographique

En fonction de ceci, il faut noter que l'introduction de ce système mécanique d'enregistrement des données a une grande influence sur la préparation et la publication du *Bulletin Hydrographique.* Par exemple, au moyen de la machine à compter IBM, des listes de résultats peuvent être facilement établies, à partir desquelles le *Bulletin Hydrographique* pourrait être préparé soit dans sa forme actuelle, soit en feuillets séparés. Toutefois, le Sous-Comité est d'avis qu'il serait prématuré de faire une recommandation définitive sur ce point, et recommande que l'étude de cette question soit poursuivie.

7. Echange de données

Le Sous-Comité considère que la proposition d'échange de données entre le Conseil et l'U.S. Hydrographic Office semble offrir de grands avantages au Conseil. Jusqu'à plus ample informé, nous ne pouvons proposer une recommandation définitive sur ce sujet, sauf dans le mesure que le projet mérite encouragement général.

APPENDICE II

Rapport du Sous-Comité de l'Année Géophysique Internationale 1957–58

Par G. Böhnecke

Le programme des recherches sur le Front polaire est étudié.

On exprime des regrets de ne pouvoir connaître plus de détails sur les plans espagnols. On espère toutefois que l'Espagne fera tout son possible pour mettre à exécution ce que l'on connaît de ses projets. Ces plans sont considérés comme ayant une grande importance pour le travail complet du CIEM en liaison avec l'AGI.

Les plans de la Commission Internationale des Pêches du Nord-Ouest Atlantique (ICNAF) pour les travaux de l'AGI ont été reçus et appréciés. Les sections sur lesquelles l'ICNAF travaillera combleront les lacunes des plans du CIEM.

Il est convenu pour obtenir une trame plus serrée des stations et pour éviter les doubles-emplois, de modifier les sections dans certaines régions. Les positions des sections pourraient être discutées par les membres intéressés. De plus, il est recommandé que tous les pays membres fassent connaître au Service Hydrographique du Conseil les dates exactes de départ et de retour de leurs navires de recherches qui prendront part aux travaux de l'AGI.

A la suite de ces recommandations, le Service Hydrographique préparera un nouveau tirage de la carte indiquant les sections à étudier et établira un tableau contenant les dates de départ et de retour, pour autant qu'on les connaisse, pour les navires participants. Il est décidé que la carte et le tableau seront distribués vers le 15 novembre à tous les états membres, en leur demandant d'y apporter éventuellement des corrections. Les réponses devront être parvenues avant le 31 décembre 1957.

Le Sous-Comité rappelle l'offre aimable faite, il y a quelques années, à Copenhague par l'Hydrographe britannique, pour combler les lacunes en prêtant l'assistance de ses navires dans la mesure où les besoins de son service le permettront.

Il est demandé à tous les pays membres d'envoyer *aussi rapidement que possible* au Service Hydrographique du Conseil, les résultats de leurs recherches durant l'AGI.

Le Sous-Comité de l'AGI attire l'attention des membres du Comité Hydrographique sur les dispositions particulières appliquées pendant l'AGI en ce qui concerne les résultats. Les membres sont priés d'envoyer *deux copies* de leurs résultats au Service Hydrographique et il leur est rappelé que des copies doivent aussi être envoyées (soit par l'intermédiaire de leurs Comités nationaux, soit d'une autre façon) aux Centres Mondials des Données de l'AGI.

APPENDICE III

Rapport du Sous-Comité des Résultats du Bathythermographe

Par P. Groen

Le Sous-Comité a étudié différents plans susceptibles d'être suivis pour prendre les données des bathythermogrammes et les reporter sur des fiches perforées.

En ce qui concerne les profondeurs standards auxquelles les températures doivent être lues pour être reportées sur des extraits il est recommandé d'utiliser le système métrique comme pour les observations faites en série et de prendre au moins les profondeurs suivantes:— 0, 10, 30, 50, 75, 100, 150, 200, 250, 300 mètres.

Toutes ces températures peuvent être portées sur une seule fiche perforée, qui peut également indiquer la profondeur de la couche de mélange supérieure. Une deuxième fiche devrait être utilisée pour l'enregistrement des données complémentaires de la feuille de résultats du bathythermographe.

Toutes les données devrait être envoyées au Service Hydrographique sous des formes standards à partir desquelles elles pourraient être directement portées sur des fiches perforées.

Le Sous-Comité demande sa dissolution et que d'autres détails techniques soient étudiés par le Sous-Comité pour la mécanisation du travail du Service Hydrographique.

APPENDICE IV

Rapport du Sous-Comité de Recherche sur la Remontée d'Eau Profonde Sub-Arctique le long de la Crête Islande-Féroë

Par John B. Tait

Le Président fait connaître l'acceptation de principe, par le Comité Hydrographique, du projet de plan de recherche préparé par le Sous-Comité et l'assurance d'avoir au moins huit navires de recherche participants; un navire pour chacun des pays suivants: Danemark, Islande, Ecosse et l'URSS; deux navires pour l'Allemagne et pour la Norvège. On mentionne également la possibilité d'avoir au moins encore un bateau d'un autre pays.

En se référant à la carte qui accompagne le projet du plan, le Danemark demande à ce que son bateau opère en B ou C, l'Allemagne en A et F, l'Islande en G ou H, l'Ecosse en B ou C et l'URSS en B ou E.

Le Dr. Cooper demande si tous les navires participants auront les appareils de navigation nécessaires pour relever leur position avec exactitude sur un réseau de stations aussi serré.

Le Dr. Lednev fait savoir que les navires soviétiques n'ont pas encore ces appareils et il demande l'aide du Sous-Comité pour les obtenir. Le Dr. Böhnecke signale que le même problème a été posé à la réunion du groupe de travail pour l'océanographie, du CSAGI à Göteborg en janvier 1957 et recommande d'entrer en communication avec l'Amiral Day, coordonnateur des recherches pour l'AGI sous le couvert du CSAGI, qui prépare un résumé des informations sur les appareils de navigation.

Il est fortement recommandé que tous les navires participant aux recherches proposées soient dotés d'un équipement électronique ou radio permettant la localisation (c'est-à-dire Loran et Decca).

M. Hermann fait remarquer qu'une partie essentielle du plan dépendant d'un équipement adéquat de mesure de courants, la période du mois de juin 1959 qui avait été suggérée ne conviendrait pas si un tel équipement n'était pas livré à ce moment. Il est décidé de suivre de près le développement des courantomètres dans tous les pays.

Le Dr. Böhnecke souligne l'importance de fréquents rapports de position sur tous les échogrammes.

Les additions ou amendements au Avant-Projet soumis dans leurs mémoires par le Dr. Cooper, le Dr. Lednev et par l'Association Internationale d'Océanographie Physique dans une lettre au CIEM approuvant chaleureusement le plan, sont étudiés dans les différents paragraphes du Avant-Projet. D'autres commentaires sur ces suggestions seront faits par correspondance; certaines de ces suggestions dépendront (a) de la disponibilité d'un équipement perfectionné et (b) de la participation des bateaux supplémentaires.

Un plan revu sera soumis à la prochaine réunion du Conseil.

Comité du Plancton

Président: Prof. E. Steemann Nielsen

I. Compte-rendu

La liste des membres est vérifiée. Les rapports sur les travaux effectuées en 1956 sont adoptés. Il est convenu de transmettre au Comité Consultatif une recommandation concernant la publication des communications présentées au Symposium du Plancton. Le Dr. J. H. Fraser présente un rapport sur l'avancement de la publication des *Fiches d'Identification du Zooplancton*. Il est décidé d'envoyer une lettre de remerciements au Dr. Thorson, qui désire abandonner ses fonctions de co-éditeur des Fiches d'Identification.

Il est convenu de laisser les autres comités discuter les problèmes concernant la réorganisation des comités.

Les membres du Comité décident d'envoyer à l'UGGI une recommandation tendant à ce qu'un symposium traitant de l'éclairage sous-marin soit tenu au cours de la réunion de l'UGGI en 1960.

Le Professeur J. Krey présente un projet concernant des monographies du plancton. Les membres sont d'accord sur l'importance des besoins en documents taxonomiques, et il est décidé que le projet sera étudié par le Prof. Krey, le Prof. Braarud et le Dr. Cole. La possibilité de tenir éventuellement dans quelques années un symposium sur le zooplancton est débattue.

Le Prof. E. Steemann Nielsen est réélu Président.

II. Communications

B. M. Bary: "A closing high-speed plankton catcher for use in vertical and horizontal towing".
M.-L. Furnestin (presentée par Professeur F. Bernard): "Chaetognathes and zooplankton of the Moroccan Atlantic area".
P. J. Warren: "Description of an improved rotation counter for zooplankton".
F. Bernard: "Density of zooplankton viewed from the bathyscape".
W. Mańkowski: "Preliminary investigations of the plankton production of the southern Baltic".
Dr. Zenkevitch's proposition à l'UNESCO.

III. Recommandations

1. Le Comité du Plancton et les participants du Symposium recommandant avec insistance que toutes les contributions, discussions et recommandations soient publiées par le CIEM. Il est souligné, que la nature du sujet considéré exige qu'une telle publication soit faite aussi vite que possible.

2. Le Comité du Plancton et le Symposium signalent que les documents présentés par la FAO ont été très utiles, et espèrent qu'il sera possible de publier ces documents séparément. Les membres du Symposium ont accepté d'aider à la rédaction finale de ces documents.

Comité Statistique

Président: Dr. J. Lundbeck

I. Compte-rendu

Le *Bulletin Statistique* pour 1955 et les *Statistical News Letter* No. 1 sont présentés au Comité, la dernière publication contenant les données statistiques sur le rendement et "l'effort de pêche" du hareng de la Mer du Nord après division par petites régions et par mois.

La compilation et la publication des données statistiques relatives à la composition de la taille et de l'âge des captures de poissons protégés par la Convention de Pêche de 1946 ainsi que du hareng de la Mer du Nord est étudiée.

Le Dr. J. Lundbeck est réélu Président.

II. Communication

J. A. Gulland & R. J. H. Beverton: "Some proposals on the requirements and presentation of data for fish population studies".

III. Recommandation

Le Comité Statistique reconnaît l'importance de la demande du Comité de Liaison tendant à une prompte publication des données sur l'âge et la taille des poissons de toutes les espèces protégées, et il recommande que le Secrétariat s'engage à recueillir auprès des pays membres ces données pour les espèces protégées et le hareng, afin de les publier promptement et régulièrement dans les *Statistical News Letters*.

2ÈME PARTIE

RAPPORT ADMINISTRATIF

REPORT

of

ADMINISTRATION FOR THE YEAR ENDING OCTOBER 31st 1957

I. General

Composition of the International Council

Delegates

Italy has nominated Professor MARIO PICOTTI, Istituto Sperimentale Talassagrafico, Trieste, and Professor CARLO MALDURA, Laboratorio Centrale di Idrobiologia, Rome, as Delegates with the first-mentioned as Senior Delegate.

Portugal has appointed Dr. HERCULANO VILELA as Delegate instead of Dr. RAMALHO.

Spain. After the death of Admiral RAFAEL GARCIA RODRIGUEZ, Admiral ARTURO GÉNOVA Y TORRUELLA has been appointed Senior Delegate.

Composition of the Bureau

After the death, on 21. August 1957, of the Council's President, Professor H. U. SVERDRUP, the Bureau consists of the following members:—

Dr. Å. VEDEL TÅNING, President; Dr. J. FURNESTIN, First Vice-President; Mr. A. J. AGLEN, Scotland, Dr. LELOUP, Belgium, and Mr. G. ROLLEFSEN, Norway, Vice-Presidents.

Committees and Editors

At the 45th Council Meeting, September—October 1957, Mr. JÓN JÓNSSON, Iceland, was elected Chairman of the Distant Northern Seas Committee; Dr. H. VILELA, Portugal, succeeded Dr. RAMALHO as Chairman of the .Scombriform Fish Committee, and Professor G. V. NIKOLSKY was elected Chairman of the Salmon and Trout Committee, succeeding Dr. A. E. J. WENT, who was elected Chairman of the Consultative Committee.

As Cdr. J. R. LUMBY has resigned as Editor of the *Journal du Conseil* this post has been taken over by the Secretary General, assisted by Dr. F. R. HARDEN JONES, Lowestoft.

Meetings

A meeting of the Bureau took place at Copenhagen on 5. May, and was attended by all Members and the Chairman of the Consultative Committee.

Following the Recommendation of the Herring Committee the three nominated Herring experts: Messrs. O. AASEN, E. BERTELSEN, and D. H. CUSHING, met at Copenhagen on 8. and 9. November 1956, to prepare a detailed plan for the Herring Tagging Experiment in the southern North Sea. A report from this meeting was circulated to the member countries concerned with an invitation of participating in the plan. The following countries were willing to participate: Denmark, England, Germany, Netherlands, Poland, Sweden, the USSR, and Norway (technical assistance).

A meeting convened by the Secretary General was held on 18. and 19. February 1957, at Copenhagen and was attended by: Drs. Å. VEDEL TÅNING and E. BERTELSEN Denmark), Dr. G. KREFFT

(Germany), Mr. G. J. Lienesch (Netherlands), Mr. J. Popiel (Poland), Dr. H. Höglund (Sweden), and Dr. D. H. Cushing (England). The Chairman of the Herring Committee, Mr. O. Aasen, was invited to take part.

The taggings were carried out in July—August by means of a chartered vessel (M/S "Rygrunn") assisted by the research vessels "Jens Væver", "Platessa", "Clupea", and "Sir Lancelot". Nearly 13,000 herring were tagged and more than 250 tags have been returned.

The conjoint meeting of ICNAF, FAO, and ICES' Comparative Fishing Committee took place at Lisbon between 27. May and 3. June. A report of the meeting was submitted at the Council Meeting.

The meeting of the co-opted members of the Liaison Committee was held at Lowestoft on 7. and 8. March 1957.

II. Central Office

Publications

Rapports et Procès-Verbaux, Vol. **142**, April 1957 (Proc.-Verb., 1956, Adm. Rep. for 1955).
— Vol. **143**, Pt. I, "Herring of the Southern North Sea" published October 1957.
— Pt. II, On Herring "Races", in preparation.
Journal du Conseil, Vol. XXII, 1, issued October 1956.
— Vol. XXII, 2, issued February 1957.
— Vol. XXII, 3, issued June 1957.
— Vol. XXIII, 1, published October 1957.
— Vol. XXIII, 2, in preparation.
Annales Biologiques, Vol. XII, issued February 1957.
— Vol. XIII, in preparation.
Zooplankton Sheets, Nos. 61—70, published October 1957.
Bulletin Statistique, Vol. XL for 1955, September 1957.
— Vol. XLI for 1956, in preparation.
Statistical News Letters, No. 1, published August 1957.
Bulletin Hydrographique for 1953, issued September 1957.
— for 1954, in preparation.
Hydrographical Synoptic Charts, Charts for April—December 1956 and for January—March 1957 have appeared.

Income and Expenditure Account for the Financial Year $^{1}/_{11}$ 1956—$^{31}/_{10}$ 1957

EXPENDITURE

I. Incidentals	D. kr.	D. kr.
President	4,999.35	
Chairmen of Committees	20,555.98	25,555.33
II. Salaries		
General Secretary	23,074.71	
Administrative Department:—		
Assistant Secretary	15,159.76	
Assistant	10,732.75	
Publication Department:—		
Assistant Secretary	15,159.76	
Assistant	10,372.75	
Statistical Department:—		
Assistant Secretary	14,514.43	
Hydrographical Department:—		
Hydrographer	22,524.14	
1st Assistant	13,960.33	
Clerical Assistant	9,104.75	
Part-Time Assistant	4,888.42	
Part-Time Assistant	4,291.04	143,782.84
III. Office Expenses		
Rent, Light, and Heating	10,804.06	
Stationery	7,670.36	
Postage, Telephone, etc.	4,558.21	
Furniture	6,182.14	
Insurance	1,041.80	
Upkeep – Cleaning	4,680.25	
Miscellaneous	5,351.51	
Expenditure in connexion with Council Meeting	3,532.85	43,821.18
IV. Travelling Expenses		24,338.12
V. Publications		
Printing	55,252.19	
Translation	2,127.07	
Distribution	1,548.38	
Honoraria for reviews in J. de Cons.	1,040.00	
Editor of *Journal du Conseil*	4,013.19	
Editor Assistant	1,500.00	
Editor of Plankton Sheets	1,071.99	66,552.82
VI. Pensions		
Miss I. Hansted	7,800.00	
Miss E. Brønniche	9,804.00	
Miss M. Rehder	9,804.00	
Contribution, Pension Insurance and Pension Saving	8,966.80	36,374.80
Extraordinary Expenditure (Mrs. Sverdrup)		2,000.00
Unexpended vote carried to Creditors		34,800.00
Excess of Income over Expenditure		48,722.85
		425,947.94

RECEIPTS

I. Contributions	D. kr.	D. kr.
Belgium	20,000.00	
Denmark	20,000.00	
Finland	11,667.00	
France	40,000.00	
German Federal Republic	40,000.00	
Iceland	20,000.00	
Ireland	15,000.00	
Italy	10,000.00	
Netherlands	20,000.00	
Norway	20,000.00	
Poland	20,025,84	
Portugal	15,000.00	
Spain	20,000.00	
Sweden	20,000.00	
United Kingdom	40,000.00	
U. S. S. R.	40,000.00	371,692.84
II. Interests		
on Bank Deposits	10,158.83	
on Investment Reserve Fund	4,644.00	
on Pension Fund	4,873.50	19,676.33
III. Sale of Publications		31,319.91
IV. Contribution from Woods Hole Oceanographic Institution and Texas towards collecting and publishing American and Texan observations in *Bulletin Hydrographique*		3,258.86
		425,947.94

Balance Sheet 31st October 1957

LIABILITIES

	D. kr.	D. kr.
Capital Reserve Fund		
Capital Reserve Fund	112,488.26	
Excess of Income over Expenditure	48,722.85	
Difference in exchange	2,240.44	163,451.55
Pension Fund		106,564.16
Creditors		
Contributions for 1957/58 prepaid	245,000.00	
Chairmen Incidentals	1,094.10	
Sale of Series of Publications from Library	6,745.04	
Hydrographical Punch Cards (Deutsches Hydr. Inst.)	5,000.00	
Unexpended vote	34,800.00	292,639.14
		562,654.85

ASSETS

	D. kr.	D. kr.
Cash at Sparekassen	399,729.64	
Cash at Post Office	478.21	
Cash on hand	268.76	400,476.61
Bonds		
$4^1/_2$ % Danish State Bonds redeemable in 1997, nominal value kr. 213,000.00 at cost 171,039.56, market value 31/10 1957, 76 %		161,880.00
Debtor, offprints		298.24
		562,654.85

Á. Friðriksson,
General Secretary

Else Hedegaard

I have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that it is in accordance therewith. I have verified the existence of the cash on hand and at bankers as well as of the Treasury Bonds.

Copenhagen, January 27th 1958.

(sign.) Karl Sørensen,
Statsautoriseret Revisor
(State-authorized Accountant)

We have scrutinized the foregoing Accounts and Balance Sheet and are satisfied that they are correct.

Á. Vedel Tåning

Poul M. Hansen — B. Dinesen — Jöran Hult

Mario Picotti — A. J. Aglen — W. Cieglewicz

REPORTS

of

AREA AND OTHER COMMITTEES

Distant Northern Seas Committee

1956

By Å. Vedel Tåning

During 1956 the following research vessels of member countries operated in the Distant Northern Seas:—

Belgium: none.
Denmark: "Dana", "Adolf Jensen".
England: "Ernest Holt".
Finland: none.
France: "L'Ailette".
Germany: "Anton Dohrn".
Iceland: "Ægir", "María Júlía".
Ireland: none.
Netherlands: none.
Norway: "G. O. Sars", "Johan Hjort".
Scotland: "Explorer", "Scotia".
USSR: "Persei-2", "Rossiya", "Topseda", "Aleksei Otkupshchikov", "Polyarnik".

Several chartered vessels, fishery inspection vessels, commercial vessels on regular runs, etc. have also made valuable observations; these are mentioned below in the reports from member countries. The data obtained are published in *Bulletin Hydrographique*, *Annales Biologiques*, and other of the Council's publications and in national series.

Several matters are dealt with in the reports from the special committees.

Belgium

(Ch. Gilis).

No work was carried out at sea in the area.

Denmark

Faroe Waters and the Northern Atlantic

(Å. Vedel Tåning).

This year the "Dana" operated for only a short period, the latter part of June, in Faroe waters, owing to extended operations in the North Sea. The routine section across the Faroe-Shetland Channel was worked and research on pelagic fry around the Faroes was carried out. The section from the Faroes to East Greenland was also worked as usual. The section from Cape Farewell to the English Channel was run in August. Hydrographic observations, including bathythermograph lowerings, were made on all sections, together with stramin net and Hensen net hauls for phytoplankton; plankton production was determined by the ^{14}C method.

The Faroe inspection vessel "Ternan" operated this year very actively in Faroe waters; in April and June quantitative studies were made of the occurrence of eggs and fry of cod, haddock, and saithe, and in June herring researches were undertaken north of the islands (as far north as 65° N.) in co-operation with the Icelandic research vessel "Ægir" and the Norwegian research vessel "G. O. Sars". The motor cutter "Akranes" was chartered for cod marking experiments in the autumn, and the Danish inspection vessel "Thetis" occupied hydrographical stations in the northern herring area in April and September.

Cod otoliths and measurements were collected from commercial catches as usual; about 1500 samples of otoliths were secured and about 4300 measurements made. Material for age assessment was obtained also for plaice, tusk, saithe, halibut, and witch.

West Greenland Waters (P. M. Hansen).

Offshore Work:

The "Dana" operated in West Greenland waters from 10. July to 1. August. The "Adolf Jensen" worked on the banks at times between April and September.

Hydrographic observations were made chiefly at 55 stations on 5 sections off West Greenland, at 10 stations temperature records were obtained with the bathythermograph.

Plankton. Pelagic hauls with the 2 m. stramin net were made at 30 stations, and vertical hauls with the Hensen net were carried out at 16 stations.

Productivity. Observations on productivity (by the ^{14}C method) were made at 8 stations.

Coastal Waters and Fjords:

The "Adolf Jensen" worked throughout the year in the area between about 64° N. and 67° N. In the Julianehåb and Nanortalik districts the "Immanuel" continued the investigations started in 1955. The "Tornaq" worked during the summer in the Sukkertoppen and Godthåb districts. Part of the material collected by the "Adolf Jensen" and the "Tornaq" was examined at the field laboratory in Godthåb.

Hydrographic observations were made by the "Adolf Jensen" and the "Tornaq" at 64 stations, with temperature measurements by bathythermograph at 5 stations; 36 stations were occupied by the "Immanuel" in the Julianehåb and Nanortalik districts.

Plankton. Pelagic hauls with the 1 m. stramin net were made at various stations in the fjords and coastal waters, and on the banks, at all seasons of the year. In the Godthåb, Julianehåb, and Nanortalik districts pelagic hauls, and vertical hauls with the Hensen net, were made regularly at fixed stations. At Godthåb samples of microplankton were taken with the 30 cm. silk-gauze net at all seasons of the year. Productivity measurements were also made in these regions.

Cod. See the report of the Gadoid Fish Committee.

Salmon and Char. Electro-fishing was carried out in different rivers in the Sukkertoppen, Godthåb, and Julianehåb districts for stock analysis. Scale samples from 171 salmon and otoliths from 928 char were collected for age and growth analyses. Stomach contents were collected from small salmon and char for studying the competition between the two species for food. 147 small salmon and 213 char were tagged with plastic tags. In April salmon eggs from northern Norway were set out in a river in the Godthåb district.

Spotted and Striped Wolffish (*Anarhichas minor* and *A. lupus*). The distribution of larvae was studied and fishing experiments were made with long-lines. Otoliths were collected and length measurements made for studies of the composition and growth of the stock. 644 wolffish of both species were tagged with ebonite disks.

Greenland Halibut. The distribution of larvae was studied, and length measurements made. Tagging experiments were undertaken.

Redfish. The distribution of larvae was studied, as was also length in relation to weight. Samples of otoliths were obtained and 75 redfish were tagged in Godthåb Fjord.

Deep-Sea Prawns (*Pandalus borealis*). Fishing experiments with the shrimp trawl and the collection of material for biological investigations were continued throughout the year in the Godthåb, Julianehåb, and Nanortalik districts.

England

(G. C. Trout).

The "Ernest Holt" carried out six cruises to the Barents Sea during 1956. Apart from the first cruise, which was to continue observations on the Murman Coast plaice population, 426 of which were tagged, the main aim of the "Ernest Holt's" work was to develop the technique of echo-survey of cod shoals on the bottom, on the main grounds of the Spitsbergen Shelf.

Hydrographic and plankton sections were worked in conjunction with the "G. O. Sars" and observations exchanged, whilst during the December cruise the "Anton Dohrn" also co-operated with the "Ernest Holt" in obtaining hydrographic cover. (See also Gadoid and Hydrographic Committee Reports).

Finland

(Ilmo Hela).

No work was carried out at sea in the area.

France

(J. Furnestin).

The inspection vessel "Ailette" carried out hydrographical work in May, June, and July off the Norwegian coast between Bergen and Hammerfest, in the Barents Sea, and off the Faroe Islands and Iceland.

The French Weather Ships "Mermoz" and "Le Verrier" obtained 150 water samples and surface temperatures at station "Alfa" (62°00′ N., 33°00′ W.) and on passage to and from this position.

Germany

(Adolf Kotthaus).

Work at Sea

In 1956 the following cruises were made with the R. V. "Anthon Dohrn" to the Distant Northern Seas area:—

Cruise 1 (3.I.—2.II.1956) was to the waters round Iceland, and to the Iceland-Faroe Ridge (Dr. U. Schmidt in charge).

Special investigations were made on *Pollachius virens* (length, weight, age, stomach contents, daily periodicity in feeding, etc.). Measurements were made and otolith samples taken from other commercial fish; 39 trawl hauls were carried out.

Cruise 2 (26.IV.—14.V.1956) was made to the waters round the Faroe Islands, the Iceland-Faroe Ridge, and the south coast of Iceland (Dr. A. Kotthaus in charge).

Special investigations were made on *Sebastes marinus* (both types), *Molva molva*, *M. byrkelange*, and *Brosme brosme*, etc. (length, weight, age, maturity, parasites, stomach contents, etc.). Other commercial fish were measured, and in some cases otolith samples were taken. 21 trawl hauls were made. Redfish were marked by the hook method. Rearing experiments were made on redfish larvae.

24 samples were obtained with the van Veen grab for bottom fauna investigations. The invertebrate fauna caught by the trawl was examined. Hauls with the young-fish trawl were made from 50 to 0 m. at 7 stations.

Cruise 3 (18.VII.—15.VIII.1956) was to Spitsbergen waters (Dr. A. von Brandt in charge).

Problems of fishery technology connected with nets were studied.

Cruise 4 (15.XI.—15.XII.1956) was to waters northwest of Norway and to Hope Island (Dr. U. Schmidt in charge).

Special investigations were made on *Pollachius virens* and other gadoid species, as described under cruise no. 1.

Cruises nos. 1, 2, and 4 together provided the following material for fish, other than gadoid fish:—

	Length measurements	Age (Otoliths)	Maturity determination
Sebastes marinus (both types)	4,189	1,144	3,181
Sebastes viviparus	850	38	344
Other species	3,820	253	28

Market Investigations

At Bremerhaven fish market, only redfish were sampled.

	Length measurements		Age determinations number of otoliths
	Number	Kg.	
Greenland, W. coast	2,548	4,450	424
Greenland, E.coast (Angmagssalik and Dohrn Bank)	11,262	24,858	1,965
Iceland, all fishing grounds	9,270	15,300	2,458
"Rosengarten"	1,659	2,000	523
Faroe waters	2,154	2,900	620
Norwegian coast	6,430	7,605	1,567
Bear Island	2,660	2,000	527
Spitsbergen	423	400	120
Barents Sea	802	1,150	316
Total	37,208	50,660	8,520

Other Market Measurements

Area	Redfish		Greenland Halibut	Wolffish
	Samples	Length measurements	Length measurements	Length measurements
Bear Island	3	811	152	—
Norwegian coast	4	656	—	—
Iceland	3	573	—	534
Greenland (E.)	7	1,564	—	—
„ (W.)	3	680	—	18
Total	20	4,284	152	552

Iceland

(Jón Jónsson).

For information on gadoid fish, herring, hydrography, and plankton, see the reports of the special committees. The following work was carried out on species within the purview of this committee.

Redfish. Two cruises were made with the Icelandic trawler "Fylkir", the first in July and the second in September. On the first one, valuable new fishing banks for redfish were found off the East Greenland coast. During these cruises, biological material was collected and observations on bottom temperature obtained. A first attempt to tag redfish with loose hooks was made. A total of 417 otoliths and 4,919 length measurements was secured for redfish from Icelandic waters, and 879 otoliths were collected and 12,461 specimens measured in Greenlandic waters.

Flatfish. During the year four cruises with the research vessel "María Júlía" were made and in the course of these cruises the following material for flatfish was collected:—

Pl. platessa: 2,455 were tagged at various localities around the coast; 3,762 were examined for age, length, and sexual maturity, and 6,619 were measured.

Hipp. vulgaris: 42 were tagged in Faxa Bay; 127 examined for age, length, and sexual maturity; 21 measured.

Pl. limanda: 551 otoliths were obtained and 6.943 fish measured.

Pl. microcephalus: 96 otoliths obtained and 1175 fish measured.

Pl. cynoglossus: 61 measured.

Drepanopsetta platessoides: 4,050 measured.

Zeugopterus megastoma: 37 measured.

In connexion with the investigations on flatfish, bottom samples were obtained at six localities around Iceland.

Other Species. In addition the following species were otolithed and/or measured: *Gadus merlangus*, *Gadus virens*, *Molva molva*, *Anarchicas lupus*, *Anarhichas minor*, *Lophius piscatorius*, *Cyclopterus lumpus*, *Chimaera monstrosa*, *Acanthias vulgaris*, *Raja batis*, *Raja radiata*, and some others.

Ireland

(A. E. J. Went).

No work was carried out at sea in the area.

Netherlands

(P. Korringa).

No work was carried out at sea in the area.

Norway

See the reports of the special committees.

Scotland

(B. B. Rae).

Operations by Scottish research vessels in the Distant Northern Seas area were curtailed in the first half of 1956 as a result of 1) an outbreak of fire in F.R.S. "Scotia", which put the vessel out of action for several weeks, and 2) unavoidable delay in bringing the new research ship "Explorer" into commission.

Investigations were carried out in the area on the following cruises:—

1. "Scotia"— 16. July—9. August. Butt of Lewis to Faroe Bank and east of the Wyville-Thomson Ridge to Shetland.
2. "Explorer"— 20. August—15. September. Butt of Lewis to Faroe Bank, circumnavigation of Iceland, and Nolsø to Flugga.
3. "Explorer"— 18.—29. October. East Faroe, experimental trawling.
4. "Explorer"— 7. November—1. December. Butt of Lewis to Faroe Bank, and Nolsø to Flugga.

Hydrographical and plankton observations were made on each cruise, although bad weather occasionally interfered with this work. Current-meter experiments were carried out on the Wyville-Thomson Ridge. Fishing by means of trawl and great-lines was carried out on a limited scale at Faroe and at Iceland. The sampling of haddock and chicken halibut from Faroese grounds was continued on commercial catches landed at Aberdeen. The results of these investigations will be reported elsewhere.

During the past five years the infestation of halibut by the larvae of the cestode *Grillotia erinaceus* has been studied in commercial landings at Aberdeen from most North Atlantic fishing grounds. A report on the distribution of this parasite and on the proportion of halibut affected has been prepared with a view to publication.

U. S. S. R.

(V. J. Travin).

The following research vessels took part in surveys of demersal fish in 1956:—

"Persei-2": 8 cruises in different parts of the Barents Sea and in the Medvezhinsk-Spitsbergen area.

"Rossiya": 2 cruises along the continental shelf from the Røst Flat to Bear Island, 5. March—26. April and in Icelandic waters (including the "Rosengarten"), 12. May—15. June.

In addition, research personnel of the Polar Institute participated in 32 cruises with survey trawlers. Hydrological observations were also made with the survey vessels "Aleksei Otkupshchikov" (6 cruises), "Topseda" (9 cruises), and the Hydro-Meteorological Service ship "Polyarnik" (5 cruises). On most of these cruises hydrological sections were run in the Barents Sea, and only three cruises touched the Norwegian and Greenland Seas.

In 1956:	Number of fish measured	Otoliths and scales collected
Cod	239,692	9,984
Haddock	104,528	3,359
Redfish	145,400	9,306
Total	489,620	22,649

19,909 specimens of cod and haddock were tagged in the southern part of the Barents Sea and in the Medvezhinsk-Spitsbergen area in 1956.

Stomach contents of commercial fish were examined and gonads collected for later histological investigation. The relation of liver to body weight in gadoid fishes at different seasons was also investigated. Measurements of the following fish were also secured: pollack, various flatfish, halibut, ling, etc.

In the course of the year 3,593 ordinary hydrological stations were occupied, and 16 24-hour and 44 12-hour hydrological stations were also worked.

Near Northern Seas Committee

1956

By Jöran Hult

Reports on the work carried out have been received from Belgium, Denmark, England, France, Germany, Ireland, Norway, Poland, Scotland, Sweden, and the USSR. As was the case in 1954 and 1955 most of the work done in the Near Northern Seas area is described in the reports of the committees on scientific subjects.

Belgium

(E. Leloup).

Work at Sea

Hydrographical observations were made on board the "West-Hinder" lightship and the fishery research vessel "Hinders". For further details, see the report of the Hydrographical Committee.

Work on Fish

No work was done within the area of this committee, but for particulars of other biological work carried out, see the reports of the Comparative Fishing, Herring, Sardine, and Shellfish Committees.

Observations on other organisms living in Belgian coastal waters were made in order to enumerate the populations of the different species and assess their seasonal fluctuations. These observations were carried out regularly at several places on the Belgian coast.

Denmark

(K. Popp Madsen).

Work at Sea

In 1956 the investigations in the North Sea proper were directed mainly to experimental trawlings for whiting. A network of stations covering the entire area was worked with the herring trawl by the research vessels "Sujumut", "Jens Væver", and "Dana" from 19/4 to 8/6, 17/6 to 28/7, and 21/8 to 28/9, respectively. Routine hydrographical observations and hauls with the 2 m. ring trawl were incorporated in the programme.

In June the "Jens Væver" carried out experimental trawling for sole along the west coast of Jutland, and made quantitative and qualitative investigations on the fish stock in the Horns Reef area.

The young-plaice trawl was used from a motor-boat in the Waddensea in June, August, and October.

As part of the whiting programme a number of fixed stations was worked with the herring trawl by various vessels in the Skagerak and the most northerly part of the Kattegat in April, June, September, and November. Comparative hauls were made between S/S "Biologen" and the Swedish research vessel "Skagerak", between "Biologen" and "Sujumut", and between "Dana" and "Jens Væver" at several of the stations.

Routine plankton investigations including the occurrence of the eggs and fry of fish, together with hydrographical observations and surveys of fish stocks were carried out from S/S "Biologen" in the Skagerak and Kattegat during the period April—November. Quantitative investigations on the occurrence of 0-group plaice and flounder in coastal waters were continued from the motor-boat "Havkatten" in July—November.

Work on Fish

Plaice. The stock of young plaice in the Waddensea, the Horns Reef area, and the coastal waters of the Kattegat was studied as in previous years. Market measurements of plaice were made at Esbjerg in April, May, June, July, and August; landings from the Skagerak and Kattegat areas were sampled throughout the year. Age analyses were carried out with material collected both from the market and research vessel trawl hauls. No tagging experiments were carried out in 1956.

Herring. Market sampling was undertaken as usual at all the industrial fishery ports. No tagging experiments were carried out in 1956.

Whiting. The occurrence of whiting in the North Sea, Skagerak, and the northernmost part of the Kattegat was investigated by means of research vessel trawling in spring, summer, and autumn. At each season a network of about 120 fixed stations was worked with the herring trawl. Information on the composition of the commercial landings was obtained by continuous market measurements as well as from experimental trawling.

In connexion with the experimental fishing, tagging experiments were carried out throughout the area under survey. The following numbers of various types of tags were used: 1935 iron internal tags, 320 red alcathene external tags, and 1200 modified Lea type hydrostatic tags.

Tests of the efficacy of internal tags as regards detection were carried out at several meal plants during the year.

Other Species. Material for age determination for several species was secured in the course of the research vessel cruises and also of the market work.

France

(Institut des Pêches).

Le dragueur océanique "Ailette" de la Marine Nationale a effectué des relevés de température et des prélèvements d'eau de mer en surface: en avril et mai et de septembre à octobre en Mer du Nord et jusqu'au Skagerak.

Le hareng de la Manche orientale et du sud de la Mer du Nord a fait l'objet des études habituelles au laboratoire de Boulogne (cf. Comité du Hareng).

Un atlas de pêche de la Mer du Nord, d'après les lieux de pêche des chalutiers de Boulogne de 1949 à 1955, a été publié. Douze cartes mensuelles y représentent les lieux de pêche des cinq principales espèces: hareng, merlan, maquereau, lieu noir, merlu.

Les chalutages du navire océanographique "Président-Théodore-Tissier" sur les bancs du Svinøy, commencés l'année antérieure, ont été continuées par un chalutier commercial au mois de février 1956.

England

(R. S. Wimpenny).

Work at Sea

Eight, fourteen, and twenty-two cruises were made in the Commitee's area by the "Onaway", "Platessa", and the "Sir Lancelot".

The "Onaway" made cruises in February, March, May, August, and September to investigate the occurrence of brood soles and plaice, and in July, September, October, and December in connexion with herring and sprat investigations in the Southern Bight. In April this ship was occupied in a scallop survey off Newhaven.

The "Platessa" made ten cruises investigating herring in the Southern Bight and the Channel, five in the early part of the year and five in the autumn, as well as two pilchard surveys off Cornwall in April and May. Three voyages were devoted to marking demersal fish and three to comparative fishing.

Five cruises were made by the "Sir Lancelot" in the early part of the year on the main plaice spawning grounds and eight cruises in the autumn and winter dealt with herring trawling, echo-surveys, and surveys of herring larvae. Five cruises in the spring and summer were mainly concerned with comparative fishing and the marking of demersal fish. In addition

single cruises were assigned to a plankton survey, a benthos survey, the testing of hydrographic gear, and rough ground hake trawling to the south of Ireland. Only the latter cruise was outside the North Sea—eastern Channel area.

Work on Fish

General. A continuing obligation to provide information for the Permanent Commission resulted in further work being done in mesh selection, effect of cod-end meshes in relation to speed of tow, selectivity in light twine trawls, and the towing loads of cod-ends of different twines at the same trawling speed.

For the mesh selection of cod in the North Sea revised estimates as a result of further experiments give 50% release points at a fish length that is from 3·3 to 3·6 times the mesh size on the gauge. In the case of the North Sea whiting and using a 70 mm. mesh, the comparable factor was 3·7. The somewhat constricted girths of whiting and haddock were measured and at their 50% selection lengths these girths were found to be 80% of the internal perimeter of the mesh indicated by the gauge. No effect on speed of tow of varying the size of the cod-end mesh has so far been found, but different towing speeds appeared to result in different catches. Further experiments were made comparing cod-ends of light twine including nylon and those made of heavy twine, differences, where apparent, indicated that the selectivity of the light twines was higher and it appeared that nylon could be regarded as behaving like cotton. The towing load on cod-ends towed open at $4^1/_2$ knots from the "Platessa" were measured as 926 lbs. for a double sisal mesh of 74 mm. and about 779 lbs. for single cotton mesh of 71 mm.

Members of the staff were concerned in the report of the Permanent Commission's *ad hoc* Committee and confirmed that a change from the 75 to 80 mm. net would benefit all the food species concerned.

Plaice. Surveys of the plaice spawning ground in the early part of the year stressed the importance of the more transparent water. It was also found that plaice eggs collected early in the season gave poorer hatchings than those collected later and it is thought that this may be due to loss of osmotic control. A survey of the coastal grounds between Hartlepool and Rye Bay indicated that Bridlington Bay and Rye Bay were the two best grounds for young plaice. The census of I-group plaice at Bridlington in June showed the 1956 I-group (1955 brood year) to be stronger than the I-group of 1955 (1954 brood year).

Very substantial marking experiments have been made in the Irish Sea off the Cumberland coast. Average annual growth estimates from this work were found to compare well with those from age determination data. Market measuring was continued at the ports of Lowestoft and Grimsby where 127,800 individuals were dealt with and in addition otolith samples were taken from 3,600. As with the cod the market measurements at Grimsby were extended to the catches of seiners as well as trawlers.

Sole. A survey of sole nursery grounds between the Humber, Rye Bay, and Ostend showed that small soles were absent from inshore grounds in March. In the summer the best English coastal area was on Sizewell Bank off the Suffolk coast. About 750 soles from 24 cm. upwards were marked in the Southern Bight. Of soles marked in the previous year on the Sizewell Bank 7 out of 20 were recovered a year later in the same area. Nearly 44,000 soles were measured on the fish markets at Lowestoft and Grimsby.

Benthos. The *Mactra* populations previously investigated on the Dogger Bank appear to have moved off the edge of the bank where the incidence of predators was greater. Estimates of supernatant and interstitial phosphate and of organic phosphorus were made in the Dogger area. The higher values came from the deeper stations.

Germany

(A. Bückmann).

Work at Sea

A cruise with F.R.S. "Anton Dohrn" was undertaken from 5. to 18. April in the North Sea between the continental coast and the Dogger Bank and thence to the Fladen Ground (1). The ship was again at work for research on plankton, fish fry, flatfish stocks, and mackerel from 27. June to 5. July in the southern North Sea (2).

M/S "Uthörn" carried out research work on the bottom fauna and plaice stocks from 21. April to 2. May (3), and from 5. September to 18. September (4) in the German Bight.

Hydrographic and plankton observations, including the determination of the biomass by the biuret reaction, were made on board M/S "Uthörn" in the estuary of the Weser in May (5) and again in November (6).

Similar observations were carried out at Cuxhaven during September, covering one tidal period.

(For the herring cruises, see report of the Herring Committee).

Work on Fish

Plaice. A new method for assessment of the length and age compositions, growth-rate, and abundance was used in 1956, for the first time. It was operated on the "Anton Dohrn's" second cruise, when the investigations were extended to cover the main ground fished by the German deep-sea cutters as well as the inshore nurseries off the Friesian shores (3,428 plaice were measured, 2,643 otoliths taken, and 576 samples were taken of stomach contents). In addition, market investigations were again resumed, though on a small scale, 16 cutter landings being sampled (7,306 measurements, 6,649 otoliths). During cruise 2, the water content of the muscle of plaice and dab was determined on board the "Anton Dohrn".

Dab. On cruise 1 observations were made on the age, length, abundance, and maturity of the stock of dab in the area. At the same time the abundance

and distribution of dab eggs and larvae were studied and experiments carried out on the rate of egg development at different temperatures. Observations were made of the food content of the alimentary tract, and studies of the diurnal feeding rhythms in plaice and dab were carried out at various stations on cruises 1 and 2 and, during August, at a station near Sylt. These were supplemented by experimental work in aquarium tanks.

Food fish in shrimper catches. The quantity of food fish contained in the landings of shrimpers was again investigated at different places on the North Sea coasts of Germany. In all, 802 samples were taken.

Fry of summer-spawning fish. Observations on the abundance and distribution of the fry of summer-spawning fish, chiefly pilchard, anchovy, mackerel, and horse mackerel, were made at 90 stations on cruise 2. Large quantities of pilchard spawn was met with off the West Friesian islands and of anchovy spawn inshore from Texel to Horns Reef, as in previous years.

Bottom Fauna. On cruises 1 to 4 a total of 154 samples was taken with the van Veen grab for the investigation of the meio-benthos and 40 additional soil samples were also taken. On cruise 2 the contents of the grab samples were compared with the stomach contents of the plaice taken at the same station.

Ireland

(A. E. J. Went).

No work was done in the area covered by the Near Northern Seas Committee during 1956.

Netherlands

(P. Korringa).

Work at Sea

In April 1956 the R/V "Antoni van Leeuwenhoek" was replaced by a new research ship "Willem Beukelsz", 35 m. long, with diesel-electric propulsion of 240 H.P.

The work carried out with these ships has mainly been a continuation of that in previous years. The programme could, however, only partly be carried through, because of some initial troubles with the new ship.

Five cruises, in May and October, have been allotted to routine trawling for plaice in the Dutch coastal area, and two cruises have been made for studying the distribution of the shortly metamorphosed plaice along the Dutch coast.

Work on Fish

Plaice. The routine trawling for I—V-group plaice, along three lines from the Dutch coast seaward, has been limited to two times a year, in spring and autumn.

From December till May surface plankton samples have been taken with every flood and every ebb tide from the lightvessels "N-Hinder" and "Texel" to study the intensity of spawning of plaice in the Southern Bight. The numbers of eggs—up till 40,000 per tidal catch—showed the same fluctuations on both lightvessels, but at "Texel" 20 days later than at "N-Hinder". Whether this is due to the drift of the eggs or to casual circumstances will be studied from hydrographical and other data, collected on the lightvessels and during a special cruise with the research vessel. We hope to demonstrate that regular sampling from the lightvessels can give a rough idea of the relative success of the brood.

Further, plankton was collected on a weekly basis with a small-meshed net in the inshore waters off IJmuiden to keep track of the basis food production for fish larvae near the coast. (M. Roessingh).

Sole. Data on the density, age distribution, and growth of soles have both been collected during the routine trawling for plaice investigations and from fish market samples.

Norway

(G. Dannevig).

A report from the State Hatchery at Flødevigen can be found in the *Annales Biologiques*. For particulars of the work carried out on herring, mackerel, etc. see the reports of the different scientific subject committees.

Poland

See the Herring Committee.

Scotland

(H. Wood).

The Scottish research vessels operated in the area almost continuously throughout the year apart from a cruise to Iceland in August and September, short voyages to the Faroes in October and November respectively, and over the North Atlantic Banks between mid-July and mid-August.

Delay in commissioning the new "Explorer" and the need for calibration fishing tests between the old and new vessels resulted in some restriction of effort during the first half of the year.

In addition to routine hydrographic observations numerous oxygen and phosphate determinations were made. In the plankton surveys attention was given to the abundance and distribution of haddock larvae, *Calanus*, and some of the more common indicator species. In the autumn and early winter efforts were made to define the distribution of larval and post-larval stages of herring and to follow the drift of a patch of herring larvae.

Productivity work in the North Sea has been maintained; measurements of ^{14}C uptake were made and there has been some progress in the study of the effect of hydrographical background on productivity.

Population studies of the North Sea haddock stock have been maintained with particular reference to movements and natural mortality. Infestation of

haddock and whiting by *Lernaeocera* is being investigated with encouraging results.

Investigation of the lobster and the lobster parasite *Nicothoë* has been continued.

Work on the bottom fauna of Smith Bank, Aberdeen and St. Andrews Bays, as represented by fish stomach contents and collections by grab and dredge is now near completion. Investigation of the Norway lobster in the Firth of Forth, where a fishery for this species has developed quite recently, is now in progress.

Records of rare fish have been considerably less than in 1955. Basking sharks were also unusually scarce while an increase was recorded in the landings of porbeagle shark.

More details concerning hydrography, plankton, and fish will be found in the reports of the appropriate committees.

Sweden

(J. Hult).

In consequence of engine trouble on board the research vessel "Skagerak" the work at sea could not be carried out as planned, although M/S "Eystrasalt" was able to assist in certain investigations in the Skagerak—Kattegat area.

Investigations on the consequences of opening certain coastal waters on the west coast to herring and sprat trawling were continued, as were also the whiting investigations. The species and size distribution of "trash" fish caught in the Kattegat—Skagerak area were determined.

For other fish, see the reports of committees on scientific subjects.

U. S. S. R.

(D. Radakov).

Work at Sea

In 1956 the Baltic Institute of Marine Fisheries and Oceanography (Kaliningrad) carried out three cruises in the North Sea to study the distribution and behaviour of herring. Hydrographical and plankton observations, as well as some data on the vertical migration of herring were also collected.

These cruises were made in the northern part of the North Sea in May and June and in the Dogger Bank region and Farn Deeps in October.

On the August cruise in the region of Farn Deeps a new model of the pelagic trawl was tested and observations were made on the reaction of herring towards this gear. The catches with this trawl were adversely effected by the fluorescence which occurred in the sea in August, at the time this work was carried out.

Publications 1956

Andersson, K. A.: "De stora sillfiskeperioderna på Sveriges västkust och sillen, som framkallade dem." (The great periods of herring fishing on the west-coast of Sweden and the herring which gave rise to them.) Rep. Inst. Mar. Res., Lysekil, Ser. Biol., **5**.

Dannevig, Alf.: "The influence of temperature on the formation of zones in scales and otoliths of young cod." Rep. Norw. Fish. & Mar. Invest., **11** (7).

Dannevig, Alf, & Dannevig, E. H.: "Cod populations identified by a chemical method." Ibid., **11** (6).

Gillbricht, M.: "Die Hydrographie des Jadebusens und der Innenjade." Veröff. Inst. Meeresforsch., **4**: 153—70.

Hempel, G.: "Studien zur Tagesperiodik der Aktivität von Fischen. II. Die Nahrungsaufnahme der Scholle." Kurze Mitt. Inst. Fischereibiol. Hamburg, **6**: 22—37.

Hempel, G., Hempel, I., & Lillelund, K.: "Studien zur Tagesperiodik der Aktivität von Fischen. III. Eine einfache mechanische Registrieranlage etc." Ibid., **6**: 38—41.

Kotthaus, A.: "Die deutschen Schollenuntersuchungen von 1948—54." Ber. Deutsch. Wiss. Komm. f. Meeresf., **14**: 83—164.

Kühl, H.: "Wassertemperatur und Salzgehalt an der 'Alten Liebe' in Cuxhaven im Jahre 1954. — desgl. im Jahre 1955." Veröff. Inst. Küsten- u. Binnenfischerei, **13** & **14**.

— "Untersuchung der Nahrung von jungen Seehasen (*Cyclopterus lumpus* L.) im Mündungsgebiet der Elbe." Arch. Fischereibiol., **7**: 40—47.

Lundbeck, J., & Sahrhage, D.: "Some suggestions on fish population development especially in the North Sea." ICNAF: Spec. Meet. Committee Res. & Statist., Biarritz, March 1956, Working Party 3, contr. 4, 23 pp.

Molander, Arvid R.: "Swedish investigations on ling (*Molva vulgaris* Fleming)." Rep. Inst. Mar. Res., Lysekil, Ser. Biol., **6**.

Werner, B.: "Über die Winterwanderung von *Arenicola marina* L. (Polychaeta sedentaria)." Helgol. Wiss. Meeresunters., **5**: 353—78.

Baltic-Belt Seas Committee

1956

By Aa. J. C. Jensen

Denmark

(Aa. J. C. Jensen).

The regular annual census of the fish stocks was continued; hauls were made with the standard trawl in the Belt Sea in April, June, August, September, October, November, and December; in the Baltic at Møen and Bornholm in August and September. The ring-net and the Hensen net were used for eggs, fish larvae, and other plankton in April, June, August, and September; in the Sound the Clarke-Bumpus plankton sampler was also used. The motor-boat "Havkatten" was used for fishing with the Johansen young-plaice trawl to obtain data on the density of young flatfish; at Bornholm the motor-boat of the "Biologen" was used for this purpose, but here the hand push-net was used. Motor-boats and row-boats were used for work in certain coastal areas which it is proposed to reclaim for agriculture. As usual all fish of commercial value caught by the research vessels were measured, and otoliths were taken of fish of all the more important species, or of representative samples.

Market samples of plaice were taken, especially during the winter months, for studying the commercial catches.

In connexion with transplantation operations plaice were marked in the Limfjord, and flounder were marked in Nakskov Fjord, in the Great Belt.

The sewage in certain harbours was investigated. For observations by the ^{14}C method on basic organic production, see the report of the Plankton Committee.

Finland

(Erkki Halme).

Investigations were made on the horizontal distribution of the bottom fauna and flora of the Gulf of Bothnia and the northern Baltic.

Investigations were made on the benthic fauna, especially molluscs, of Pojoviken Bay, near Tvärminne by L. Koli.

400 whitefish were tagged by B.-J. Wikgreen in the archipelago north of the Åland Islands. Up to date 18 recoveries have been made from localities from 0 to 45 km. distant from the tagging positions.

Some tagging experiments on pike in the Barö Sund area in southern Finland has been dealt with by E. Halme.

Investigations into the genesis and development of growth rings in fish scales were carried out by Th. Alfthan.

Germany

(R. Kändler).

Eggs and Larvae. The spawning survey was continued by regular plankton sampling from the "Fehmarnbelt" lightship, as in previous years.

The investigations on mackerel spawning grounds in the Belt Sea were continued.

Cruises were carried out by the R/V "Südfall" in Kiel Bay, the Great Belt, and Little Belt in June (14.—15.), and July (3.—5.). Vertical hauls with the Hensen net, and horizontal hauls with the Petersen young-fish trawl were taken for studies of the distribution of fish eggs and larvae.

Fishing with the Standard Trawl. In accordance with the recommendation of the Baltic-Belt Seas Committee in 1955, comparative fishing with the standard trawl was begun in 1956. In May/June (28.—2.) and October (15.—19.), 13—14 hauls were carried out from a small fishing vessel at various places in Kiel Bay and the waters round Fehmarn.

Poland

(W. Cieglewicz).

Benthos

(a) A paper on the near-bottom (epibenthos) fauna of the southern Baltic was completed and prepared for printing. The paper was based on the material collected during the last two years, which amounted to 18 samples taken at 28 stations. This paper supplements the paper on the productivity (biomass) of the zoobenthos in the southern Baltic, which was published previously. The paper indicated that the Mysidaceae play the most important part in the near-bottom (epibenthonic) fauna of the Baltic.

(b) Material for ecological studies of the shallow water communities in Gdansk Bay was collected. In this connexion, three cruises were made with the motor-boat "Sieja" and 65 samples of bottom fauna collected. At the same time comparative tests of bottom samplers of various types used for collecting the material were carried out. These tests applied especially to the Ekman sampler and tube samplers. The intention is to discover a method that gives the most realistic representation of the vertical distribution of the animals in the bottom sediments.

(c) Quantitative investigations on the bottom fauna for the purpose of estimating the biological productivity of the bottom of the Baltic Sea in the course of a year were also carried out. In this

connexion, 190 samples were collected with the Petersen sampler.

(d) Material was collected for a paper on: "Malacostraca of the Firth of Vistula". About 50 samples were collected and the occurrence of 12 species was demonstrated.

Plants

The paper on the coastal plant biomass in the Firth of Vistula was completed and prepared for printing. This paper is based on the observations made in the course of one vegetative season (1955).

Submarine Investigations

In connexion with various underwater investigations, experiments were conducted on submarine photography.

A microfilm illustrating the development of the medusa *Aurelia aurita* in Baltic waters was completed.

Fish

Flatfish. The following measurements and examinations were carried out on the flounder (*Pleuronectes flesus*) in 1956.

Region	Measurements/ Number of specimens		Detailed examinations/ Number of specimens	
Gdansk Bay.....	15	3,791	15	1640
Kolobrzeg.....	—	—	12	840
Swinoujscie.....	8	3,009	8	810
Total.....	23	6,800	35	3,290

The detailed examinations covered length, age, sex, and stage of sexual maturity. In addition, in the Gdansk region some measurements were made of plaice, turbot, and dab.

Freshwater Fish. Investigations on the perch-pike and bream stocks in the Firth of Vistula were continued. Material was collected from April to December 1956. The detailed examinations covered 800 perch-pike and 800 bream; measurements were made of 5,884 perch-pike and 6,603 bream. 50 specimens of *Abramis virnba* were also examined in detail and 660 specimens were measured.

Sweden

(G. Otterlind).

In consequence of bad ice conditions, and engine trouble in the "Skagerak", Swedish activity in the southern Baltic was restricted to one short cruise at the end of March. Only five trawl hauls could be made.

In summer and autumn, investigations on Baltic herring and cod were made with the "Eystrasalt" in the Gulf of Bothnia, the Åland Sea, and the archipelago east of Stockholm (see Herring and Gadoid Committees). In co-operation with the Finnish R/V "Aranda" investigations on plankton and hydrography were made along three sections in the Bothnian Sea (see report of the Plankton Committee).

Commercial catches of flounder were measured at Gothland, Öland, and the Kalmar Sound.

The tagging of silver eels was continued by S. Sahlin at Åhus on the eastern coast of Scania. 550 eels were tagged in October.

U. S. S. R.

(T. Dementjeva).

Benthos

Two cruises were made in the Klaipeda-Pionersk region, to study the seasonal changes in the food supply of bottom fish. The feeding grounds of the flounder in the Gulf of Riga were studied.

Biochemical Examinations

Knowledge of the food requirements of fish is necessary for the correct assessment of feeding conditions and the proper composition of artificial food for young salmon. With this purpose in view, work was continued on the determination of moisture, protein, cyclic and basic amino acids, fats, ash, calcium, phosphorus, iron, amino-acid composition of protein, and other components of the marine invertebrates, especially Crustacea and Mollusca. Changes in the biochemical composition of young salmon at the time of their seaward migration were also studied.

Seaweeds

Quantitative estimates of the amount of agar algae in the Gulf of Riga were made by a method involving experimental sites, in which divers rendered assistance.

Publications

Banse, K.: "Über den Transport von meroplanktischen Larven aus dem Kattegat in die Kieler Bucht." Ber. Deutsch. Wiss. Komm. Meeresforsch., **14.**

Kändler, R.: "Response of the plaice to environmental factors." UN Internat. Techn. Conf. Conserv. Living Resources of the Sea, Rome 1955 (p. 102).

Krey, J.: "Die Trophie küstennaher Meeresgebiete". Kieler Meeresforsch., **12.**

Comité Atlantique
1956

Par Jean Furnestin

Les pays suivants ont adressé un rapport sur leur activité dans le secteur du Comité Atlantique:— Danemark, Espagne, Irlande, U.R.S.S., France et Union Française.

Danemark
(Å. Vedel Tåning).

During the first two weeks of August the research vessel "Dana" worked a section of stations from Cape Farewell to a position ca. 50° N. Lat., 30° W. Long. and from there to the entrance of the English Channel. On the stations of this section hydrography, plankton production (by the ^{14}C method), phytoplankton sampling, and towing with 2 m. stramin nets and Hensen net were carried out as in previous years. Of special interest was the routine section crossing the Atlantic Current west of south Ireland; this section has been operated also in 1954 and 1955 (cf. Ann. Biol., Vol. XI, 1954, p. 21, Fig. 24, and Vol. XII, 1955, p. 34, Fig. 49).

Espagne
(F. de P. Navarro).

Pendant le mois de Février, le navire de recherches "Xauen" a effectué une campagne océanographique dans la région du Golfe de Cadix et le Détroit de Gibraltar, jusqu'à la mer d'Alboran dans la Méditerranée, en faisant à chaque station les observations habituelles de températures, salinités, oxygène et phosphates aussi bien en surface qu'en profondeur.

Les laboratoires côtiers de San Sébastien, Santander et Vigo (I.E.O. et I.I.P.) ont poursuivi les observations régulières à portée locale sur l'hydrologie, le plancton, et la ponte des espèces les plus importantes au point de vue commercial.

Irlande
(A. E. J. Went).

During the year the only scientific work done in the Committee's area related to shellfish and salmon. Reports in this regard have already been made to the appropriate Committees. Surface temperatures were taken twice daily at the "Conigsbeg" lightship. Two species of rare fishes *Epinephalus gigas* Brünnich and *Cepola rubescens* L. were taken during the year.

U. R. S. S.
(Th. S. Rass).

During August—October the trawler "Sverdlovsk" en route to Newfoundland operated in the Newfoundland Bank area.

Sampling of plankton, hydrographic investigations, and trawling were carried out. A great shoal of the redfish was discovered in the Flemish Cape region, consisting mainly of *Sebastes marinus mentella* Travin (keeping to a depth of 320—420 m.), and partly of *S. marinus* L. (keeping to a depth of 250—310 m.).

France et Union Française
(Institut des Pêches).

France

(a) Campagne du navire "Président-Théodore-Tissier" en avril 1956 du Canal de Bristol au nord à la Grande Sole à l'ouest et dans le Golfe de Gascogne: hydrologie, plancton, observations biologiques sur merlan, maquereau, sardine, langoustine; étude de la sélectivité des chaluts en manille, chanvre et nylon sur le merlu et le merlan.

La seconde partie de la campagne, en mai et juin, a eu lieu de Brest aux Açores et à la côte ibérique et a consisté en: l'étude des conditions hydrologiques jusqu'à 2,000 m. (températures, salinités, oxygène, phosphates, silicates, et teneur en chlorophylle à la profondeur de 10 m.); la distribution du plancton; la localisation des positions où apparaissent les premiers germons, des chalutages sur le banc "Prinsesse-Alice" au sud des Açores.

En juillet et août, le "Président-Théodore-Tissier" a étudié dans le Golfe de Gascogne les conditions hydrologiques sur les lieux de pêche à la sardine, puis, en mer Celtique et en mer d'Irlande, la biologie du merlan, du maquereau et de la langoustine, effectué des carottages jusqu'à 1,000 m. avec carottes de 10 m. et poursuivi les recherches sur la sélectivité des chaluts sur merlu et langoustine.

Au cours de 414 stations, 50,000 poissons et crustacés ont été mesurés, 1,600 températures relevées, 4,000 analyses effectuées, ainsi qu'une centaine de dragages et 15 carottages, et 400 pêches de plancton.

(b) Les océanographes de l'Institut des Pêches ont procédé de mai à novembre, sur trois bateaux-pilote-de-pêche, à la détection par ultra-sons des bancs de

sardines depuis les côtes de Bretagne jusqu'à la frontière espagnole, en liaison avec les pêcheurs, et fait des relevés de températures et des essais de pêche à la sardine au chalut pélagique.

(c) Les frégates météorologiques "Mermoz" et "Le Verrier" ont poursuivi les recherches hydrologiques et les pêches de plancton de surface aux points J et K et sur les routes aller et retour.

(d) Les escorteurs de la Marine Nationale ont effectué chaque trimestre des observations hydrologiques de surface à l'entrée de la Manche.

(e) Des observations hydrologiques ont été faites par les laboratoires côtiers de l'Institut des Pêches, ainsi que des études sur les courants littoraux, sur la biologie du hareng, du maquereau, de la sardine, des mollusques et des crustacés. Un essai de repeuplement en homards (femelles oeuvées) a été entrepris près de la côte bretonne dans un cantonnement interdit à la pêche.

Maroc

(a) Hydrologie appliquée à la pêche comprenant relevés de température, récolte de plancton, détection de poisson: de février à décembre, de la côte jusqu'au talus du plateau continental suivant 300 stations réparties de la baie d'Agadir à l'embouchure de l'Oued Sebou.

(b) Campagne d'océanographie physico-chimique et biologique du 30 avril au 9 mars comprenant relevés de température et prélèvements d'eau (de 5 à 400 m.) et récolte de plancton en surface suivant 14 stations réparties dans le secteur géographique de Casablanca —Tanger, Cap St. Vincent—Casablanca.

(c) Chalutage par les fonds de 200 à 750 m. au large de Mazagan, Azemmour, Casablanca, Fédala, Rabat et Méhédia.

(d) Essais de filets de nylon, engin de relevage du "cerco" détection horizontale à l'aide du sondeur Simrad.

(e) Etude des espèces comestibles:—

Poissons.	Systématique et biologie des Clupéidés (sardines, aloses, anchois). Thonidés, Merlucidés, Sparidés, Scienidés, Triglidés, Scorpénidés.
Crustacés.	Etude des crevettes du large.
Mollusques.	Etude d'un banc naturel de gryphées découvertes dans l'embouchure de l'Oued Loukos. Essais d'élevage dans la lagune de Sidi-Moussa et de Oualidia.

Mauritanie

Etude des poissons côtiers et des poissons d'estuaires, ainsi que des Thonidés (*Neothunnus albacora* Lowe).

Sénégal

A Dakar, au laboratoire de l'Institut Français d'Afrique Noire, des recherches ont été poursuivies sur la systématique, la biologie et la biogéographie des sélaciens et ont porté sur 50 espèces de raies et de requins (1,000 exemplaires).

Le Service de l'Elevage a étudié les Clupéidés, les Thonidés, et principalement le développement de la pêche à l'albacore (*Neothunnus albacora* Lowe).

Guinée Française

Un laboratoire de recherches a commencé à fonctionner à Conakry.

Côte d'Ivoire

Le laboratoire créé à Abidjan étudie la pêche et la technologie des poissons. Les travaux de ce secteur ont porté essentiellement sur les Thonidés (*Neothunnus albacora* Lowe) et leur pêche, ainsi que sur les espèces côtières susceptibles de servir de base à la pêche aux thons.

L'étude de la lagune d'Abidjan et des poissons démersaux de la région a été également poursuivie.

Afrique Equatoriale Française

Les laboratoires de Pointe Noire et Douala ont continué leur recherches sur l'hydrologie du secteur équatorial et leurs travaux de biologie marine, notamment sur les Clupéidés et les Thonidés.

Publications 1956

Cadenat, J.: "Notes d'ichthyologie ouest-africaine XI, XII, XIII, XIV, XV, XVI." Bull. d'I.F.A.N., **18**.

François, Y.: "Particularités de la nageoire dorsale des larves de Clupéidés." Bull. Soc. Zool. France, **81**.

— & Blanc, M.: "Sur la croissance en longueur des rayons de nageoires chez les poissons téléostéens." Ibid., **81**.

Le Gall, J.: "Inventaire de la faune marine de Roscoff. Poissons." Trav. Stat. Biol. Roscoff, Suppl. 8.

Gibson, F. A.: "Specimen of greater weever *Trachinus draco* L." Irish Nat. Journ., **12**.

Healy, A.: "Specimen of dusky perch, *Epinephelus gigas* Brünnich, from Irish waters." Ibid., **12**.

Went, A. E. J.: "Recent records of species of fishes rare to Irish coastal waters." Ibid., **12**.

Comparative Fishing Committee

1956

By C. E. Lucas

A very profitable meeting of the Committee was held during the course of the Council's annual meeting, and the information then received from various countries will enable the Council's Liaison Committee to provide further information of direct concern to the Permanent Commission of the Fisheries Convention, 1946. The subjects included: selectivity values for cod and hake caught with manila and sisal trawls, and for sole, whiting, hake, and haddock taken by cotton and hemp trawls, together with further information about the selectivity of "light trawls" and another type of mesh-measuring gauge developing a direct and constant longitudinal pressure. It is appropriate also to record the share taken by members of this Committee in preparing the Report of this *ad hoc* Committee of the Permanent Commission on selectivity and assessment of conservation benefits, etc.

Of particular interest was the Council's decision to accept the invitation of the International Commission for the Northwest Atlantic Fisheries for the Comparative Fishing Committee of ICES to meet in conjunction with representatives of ICNAF and FAO for intensive discussions on comparative fishing and related matters at Lisbon during May/June, 1957. It was decided that the principal subjects on which the Comparative Fishing Committee should concentrate for that occasion should be "selectivity and the assessment of fishing effort"; although the various other of the Committee's objectives should be borne closely in mind so that the whole of the information available to the conjoint meeting should be turned to the best possible advantage for the Council and the Permanent Commission. Members of the Committee were also recommended to support to the best of their ability the proceedings of the International Gear Congress to be arranged by FAO in Hamburg during October, 1957.

The two international meetings just mentioned are important indications of the growing appreciation of the importance of the subjects with which this Committee is engaged. The information being gained through comparative fishing experiments of one kind or another is basic to all problems of fish conservation, and it is very satisfactory to note that the Administrative Report for 1956 refers to results from ten countries, while it is known that others are engaged in relevant work on which they are not yet ready to report. Much remains to be done but this work is already contributing substantially towards solutions to the problems presented specifically to the Committee, which have been summarized by the Chairman of the Liaison Committee of ICES as follows:—

1. Selectivity data for cod and hake caught by manila and sisal trawls.
2. Selectivity data for all species covered in the Committee's report, caught by cotton and hemp trawls both double and single braided.
3. Selectivity data for all these species except hake caught by seine net.
4. Selectivity data for all species caught with trawls and seines made of synthetic fibres.
5. The factors other than mesh size and type of material which affect the selectivity of the gear.
6. The mesh of light trawls (including the definition of a "light trawl").

At this stage of development, many of the steps forward undoubtedly lead to the definition of new problems and there is no doubt that further requests will be placed before the Committee. We are reaching a stage when it is becoming essential that further progress should be made on a co-ordinated basis. It is greatly to be hoped that, at its next annual meeting, the countries represented on the Committee will each be prepared to undertake an agreed share of the Committee's programme, so that progress shall be as speedy as the Permanent Commission's requirements demand.

Belgium

(Ch. Gilis).

At regular intervals, experimental fishing with trawl nets of different widths of cod-end meshes (70, 75, and 80 mm.) were carried out. Each net was used together with a cover net of 40 mm. meshes. The nets were used alternately.

Manipulation on the Material

1. Determination of the catch (Fish, Shellfish and other Invertebrae).
2. Recording the number and lengths of all fish. Also the total weight of each species of fish.

The object of these experiments is to study the saving effect of those nets and in particular as regards the sole fishery.

Denmark

(K. Popp Madsen).

Experiments on mesh selection was confined to a few hauls with covered cod-ends for plaice and sole. The escapement curve for plaice was well established for a mesh size in the 90 mm. region while the occur-

rence of sole was too scarce to render any useful information.

In connexion with the whiting programme, comparative hauls were made between S/S "Biologen" and the Swedish research vessel M/S "Skagerak", between S/S "Biologen" and M/S "Sujumut", and between M/S "Dana" and M/S "Jens Væver" in the waters around the Skaw.

England

(A. R. Margetts).

Further experiments were carried out to investigate the effect on trawl mesh selection of different constructions of cod-ends. "Platessa" used double-braided sisal, single cotton, and single nylon cod-ends of about the same mesh size in turn on the same trawl in a covered cod-end experiment on whiting and haddock, and "Sir Lancelot" used double sisal, single cotton, and small meshed cod-ends in an alternate haul experiment also on whiting and haddock. In both experiments the results were poor due mainly to shortage or absence of fish of the critical size, but the selectivity of the nylon cod-end was shown to be higher than that of the cotton and sisal which, under the particular conditions, did not appear to have markedly different selectivities. When "Platessa" with a heavy trawl with double sisal cod-end fished for whiting in company with a small Brixham trawler using a light cotton net the selectivity of the lighter trawl was definitely considerably higher than that of the heavier trawl.

Mesh experiments were also made to obtain selectivity data for Arctic cod and haddock and North Sea cod in manila and sisal trawls. Useful selection factors were obtained.

The size selection of herrings and pilchards by drift-nets was studied by experiments at sea and by analysis of commercial landings; factors were derived for adjusting drift-net samples to provide a more accurate representation of the true population fished.

Trials of fishing in mid-water for large gadoid fish with a modified Larsson type trawl were started but were initially restricted by inadequacy of the net depth recorder used.

Laboratory experiments were made to examine the physical properties of meshes made of different materials, especially with regard to mesh measurement. The stretching effects of various loads applied to meshes for different periods of time were observed; a consequence of this study was the listing of specifications for an ideal mesh gauge. A form of mesh gauge to comply with the essential specifications was designed and made; this was found to be more accurate in use than earlier types and eliminated operator bias.

Some simple experiments were made at sea as a beginning to the study of the changes in fishing behaviour of trawls due to changes of cod-end. There was no measurable difference in the speed of tow of a trawl due to changing from a very small mesh to a very large mesh cod-end. Single braided cotton and double braided sisal cod-ends of the same mesh size attached in turn to an 8 ft. diameter hoop were towed at constant ship engine revs. and the warp loading and flow through them measured. At $4^1/_2$ knots the load due to the sisal cod-end was roughly 20 % greater than that due to the cotton; this difference was not detectable when the cod-ends were fixed on a trawl. The water flow rate at the mouth of the cotton cod-end was faster than that for the sisal.

(See also Near Northern Seas Committee, England, p. 8).

France

(Institut des Pêches).

En avril et en août 1956, le navire océanographique "Président-Téodore-Tissier" a effectué des expériences de sélectivité avec des chaluts de textiles différents: manille, chanvre et nylon, et de maillages différents, dans le Golfe de Gascogne et en Mer Celtique.

Tous les chaluts utilisés étaient garnis d'une double poche. Les coefficients de passage ont été établis sur 24,000 merlans, 6,700 merlus, 11,000 langoustines.

Germany

(A. von Brandt).

Trawling Gear Investigations

The investigations on the behaviour of trawling gear in action were continued in 1956. A telemetering depth recorder for pelagic trawls was developed. It operates by converting the measured values into a sequence of signals of uniform frequencies, which vary according to the depth of water. The signals are emitted by an instrument attached to the net, for instance, to the headline. They are received by an oscillating lever which is either installed in the ship's bottom or dragged by the vessel.

Mesh-Selection Experiments

Selectivity experiments with trawl nets were carried out during a cruise of the fishery research vessel "Anton Dohrn" in the North Sea and during a voyage of that vessel to the west coast of Spitsbergen. The investigations dealt with:—

1. Comparison of mesh-measuring methods.
2. Changes of the mesh sizes when the nets are in action.
3. Selectivity of cod-ends made of double-twisted manila, double-plaited nylon, or perlon of varying origin.

1. When comparing the vertically and longitudinally operating pressure gauge the longitudinal Scottish instrument proved to be of greater accuracy. With nets of double manila the vertically operating gauge gives 7 % greater values on the average than the horizontally working instrument. With perlon and nylon, however, no essential difference was to be found. The values resulting from the horizontal

Scottish pressure gauge are rather greater by some per cent.

2. The average of the measurements made of a mesh-row in the longitudinal axis of the net was considered decisive for the mesh size of the whole cod-end. Formerly, the average was computed from the mesh-rows across the cod-end, e. g., always for 10 meshes with a distance of 5 rows. When using the longitudinally working Scottish instrument the average value did not show a difference.

The measurement of mesh-row in the longitudinal axis of the net is thus sufficient to obtain representative values for the average size of mesh. When using the vertically operating gauge the difference amounted to ± 1 mm. on the average.

The meshes change during fishing. There are, however, only small changes when the mesh size is computed from the average of the mesh-rows parallel to the axis of the cod-end. The selectivity factors calculated from the selectivity experiments differ thus ± 0·1. But it is suggested that the average mesh size should always be determined anew when single hauls are being evaluated.

3. The selectivity depends on the material the cod-end is made of. Some examples are given for haddock from the North Sea:—

Material:	Manila	Perlon	(Factor of the *ad hoc* Committee 1956, Manila)
Mesh size, mm.	74	73	
	2·6	3·0	(3·2)

and for haddock from the West coast of Spitsbergen:

Material:	Manila	Perlon	Nylon
Mesh size, mm.	113	107	104
	2·9	3·1	3·4

The same refers to cod from Spitsbergen:

Material:	Manila	Perlon	Nylon
Mesh size, mm.	113	107	104
	3·4	3·7	3·9

Material:	Manila	Perlon
Mesh size, mm.	133	134
	3·5	3·7

and for whiting from the North Sea the following had been found:

Material:	Manila	Perlon	(Factor of the *ad hoc* Committee 1956, Manila)
Mesh size, mm.	74	73	
	2·7	3·6	3·4 — 4·0

The selectivity factors obtained were smaller than those suggested for manila by the *ad hoc* Committee of the Permanent Commission in its report of September, 1956. That is due to the fact, that the mesh size was determined by means of a pressure gauge. Therefore the mesh was larger than if measured without pressure, so that the selectivity factor must be smaller.

The selectivity factors found for haddock from Spitsbergen are larger than those in the North Sea, i. e., longer fishes can here still escape through the meshes, whereas fishes of smaller lengths are retained in the North Sea.

If the values for the several materials are compared, it can be seen, at least for manila, that the size of the selectivity factor increases with the increasing size of mesh.

As with cotton cod-ends, it is to be observed with cod-ends made of perlon or nylon that fishes which are still retained by manila, are able to escape.

The reason for the varying selectivity of the materials was found in the course of the experiments made during 1956.

Electrical Fishery

In 1956, mainly electro-physiological fundamental research was carried out.

Practical experiments with sardines and anchovies off the Atlantic coast have shown that it is possible to kill anchovies and sardines within 12 or 5 seconds respectively in the seine net. The power used for these experiments amounted to 600 Watt. The gear consisted of a source of current (petrol generator of 0·6 KW) and an impulse sender, which was provided with a switching-system, producing pulsating current with steep increase and flat decrease. Impulse period, impulse figure, and potential could be regulated.

Iceland

(A. Sigurðsson).

Midwater trawling experiments were carried out by J. Jakobsson in order to determine:—

1. Effect of different arrangement of otterboards and towing wires on fishing efficiency.
2. Depth of trawl in relation to depth of otterboards and length of towing wires.
3. Vertical opening of trawl in relation to different horizontal additional doors.

Netherlands

(P. Korringa).

Very little time at sea could be allotted to the subject of the Comparative Fishing Committee. Some further measurements have been made of the strains in warps and legs of a Dutch type of trawl.

Norway

(G. Sætersdal).

During a cruise with "G. O. Sars" to the Barents Sea area in autumn 1956 some selectivity data were obtained for cod, redfish, and rough dab.

In October 1956 a comparative sampling of cod from a long-liner and a trawler was carried out on

the Finnmark banks in order to study the selectivity of long lines.

Some material from fishing experiments with gill nets of artificial fibres, carried out by Norwegian fishermen in the seasons 1954 and 1955, has been analysed.

Reports of these activities were presented at the meeting of the Comparative Fish Committee at Lisbon, May 1957.

Poland

(W. Cieglewicz).

During the year the Fishing Technique Department of the Polish Sea Fisheries Institute in Gdynia conducted the following tasks in the field of interest of the Committee:—

1. Comparative investigations of the "net measuring gauge" and the Schopper apparatus (dynamometer).

The purpose of this task was to determine the precision obtained when measuring the sizes of meshes by means of a "net measuring gauge" as compared with the same when using an adapted Schopper dynamometer. About 3000 comparative measurements were made by means of both instruments. A paper to be read at the Lisbon Conference was prepared.

2. The stretch of net meshes braided from various textile materials.

The purpose of this task was to examine the changes in the stretching of both wet and dry meshes. Various sizes of two kinds of samples were used in relation to the force applied: hand-braided samples of new nets and samples cut out from used cod trawls. The materials were braided from twine 1·75 mm., 2 mm., and 2·5 mm. thick. The twines were produced either from manila, sisal, rami, or steelon. The meshes were 30 mm., 40 mm., 70 mm., 80 mm., and 90 mm. A paper on the subject of stretch has been prepared for the Conference of Lisbon.

3. Investigation of the selectivity of the trawl cod-ends (a continuous work).

The purpose of this task was to examine the selectivity of trawl cod-ends made in the following way:—

Cotton		20/54	Mesh 70 mm.
Sisal	Ø	3 mm.	,, 80 mm.
Sisal	Ø	3 mm.	,, 70 mm.

A trawl cod-end known as the "combined trawl cod-end", made from three kinds of material, was also tested. This cod-end is made from:—

Cotton		40/21	all meshes 70 mm.
Cotton		20/54	
Sisal	Ø	3 mm.	

Altogether 18 hauls were made; every haul was of about 3 hours duration, the speed about 2·8 miles/hour. 23,424 cod were caught and measured; from these 4,044 fish passed to the exterior cover-bag. The investigations continue.

Scotland

(C. E. Lucas).

In April 1956 the new "Explorer" (183′ 6″ B.P.) was commissioned and, after a series of comparative fishing experiments between the two vessels, the old "Explorer" went out of commission. Meanwhile, plans have been drawn up and a contract placed for replacing the 55′ "Kathleen" with a new vessel of 70′, designed for both seining and trawling experiments.

Scottish work of interest to the Comparative Fishing Committee during 1956 has included the following:—

1. Assessments of relative fishing power among units of the Scottish fishing fleet, with particular reference to trawlers and seiners.
2. Measurements on the headline heights, drag, speed, and warp spread of trawls and seines.
3. Data on the selectivity of haddock and whiting by trawls and preliminary assessments of selectivity factors for lemon soles.
4. Assessment of the effect of a small-meshed cod-end cover on selection.
5. Drift-net mesh selection observations.
6. Underwater observations on the behaviour of model nets as a guide to the rational design of full-scale fishing gear by underwater diving observation and photography, with comparison on full-scale gear of both bottom and pelagic trawls.
7. Experiments with a "pick-a-back" trawl to investigate the vertical distribution of fish near the bottom.
8. Comparative fishing experiments with lobster creels.
9. Echometer experiments.

In addition to work of immediate relevance to the ICES programme, members of the staff contributed to the proceedings of the Research and Statistical Committee of the International Commission for the Northwest Atlantic Fisheries at Biarritz, during which much of the work concerned comparative fishing and related matters. Accounts of work done during 1956 will be found in the publications of the Commission and the Council.

U. S. S. R.

(A. Treschev).

Studies carried out in the U.S.S.R.:—

1. Experiments were conducted on modifications of bottom trawls used on large "stern" trawlers of "Pushkin" type.

2. Surveys were continued on developing a more rational way of releasing undersized fish from trawls. New types of cod-end were tested when meshes of the main netting, with a knot to knot lumen of 55 mm., were stretched by inserting, along the topping lifts, strips of netting of different mesh sizes between the

knots. These modified cod-ends entirely eliminated catches of cod of less than 35 cm.

3. New models of otterboards were fashioned and tested. Parameters of trawls fitted with these boards turned out to be better than those of trawls fitted with oval boards of old design.

4. Bottom trawls woven of capron, hemp, and rami fibres were tried, with the best results shown by capron and rami fibres.

5. Factors affecting the proportional increase of fish retained by drift-nets were also investigated. Nets of different diameter twine and of twine of various colours were tested.

Publications

ANCELLIN, J.: "Recherches sur la sélectivité des chaluts pour la pêche de la sole, du merlan et du merlu". Rev. Trav. Inst. Pêches Marit., **20** (3).

VON BRANDT, A.: "Um die Maschengrösse bei Schleppnetzen." Fischereiwelt, 8: 87—89, 1956.

— "Zur Maschenmessung bei Schleppnetzen." Protokolle zur Fischereitechnik, IV: 45—69.

HALSBAND, E.: "Untersuchungen über den Einfluss verschiedener Stromarten auf den Stoffwechsel der Fische." Arch. f. Fischereiw., **6**: 350—61.

— "Die Anwendung des Impulsstromes in der Elektrofischerei." Der Fischwirt: 155—58, 1956.

— "Die Beziehung zwischen Intensität und Zeitdauer des Reizes bei der elektrischen Durchströmung von Fischen." Arch. f. Fischereiw., **7**: 74—81.

JAKOBSSON, J.: "Síldveiditilraunir b.v." Neptúnusar 1956 (with English summary). Ægir, **49** (22).

KLUST, G.: "Längenveränderung von Netzgarnen durch Wässerung." Protokolle zur Fischereitechnik, IV: 84—106.

MEYER-WAARDEN, P. F.: "Elektrische Wollhandkrabbensperren." Anz. f. Schädlingskunde, **29** (9).

— "Plan einer elektrischen Fischsperre am Weserwehr bei Petershagen." Die Weser, **30** (9).

SCHÄRFE, J.: "Echolotungen über das Verhalten eines Heringsschwarmes gegenüber einem Grundschleppnetz." Fischereiwelt, 8: 24—26, 1956.

— "Fernmeldender Tiefenmesser für Schwimmschleppnetze." Ibid., 8: 130—32, 1956.

— "Echolotbeobachtungen über die Geräuscherzeugung durch das Rollengrundtau." Ibid., 8: 250, 1956.

Gadoid Fish Committee

1956

By G. ROLLEFSEN

REPORTS of investigations carried out in 1956 were received from Denmark, England, France, Germany, Iceland, Netherlands, Norway, Poland, Scotland, Spain, Sweden, and the USSR.

Denmark

West Greenland (P. M. HANSEN)

Cod. The occurrence of fry in inshore waters and the fjords was studied with the "Adolf Jensen" and in Davis Strait with the "Dana". Otolith samples (about 6,000) and length measurements were obtained for stock analysis.

Hauls with the fine-mesh hand seine and the shrimp trawl were made to study the distribution of cod of the three youngest age-groups. Tagging experiments were carried out with 3,273 cod at various places between Cape Farewell and about 67° N.

Gadus ogac. Otolith samples were taken and length measurements made.

Faroes (J. S. JOENSEN)

Cod. Hauls with the Hensen net and the 2 m. stramin net were made in April and June. For stock analysis 1,500 otoliths were collected and 4,300 cod were measured.

Baltic-Belt Seas (J. KNUDSEN)

Cod. During April hauls with the 2 m. ring-trawl were carried out in order to study the occurrence of cod larvae. Fishing with the cod trawl was undertaken from April to December in all sections of the area. The cod were measured and otoliths were collected from representative samples. A number of fish was subjected to investigation of the stomach contents and the developmental stages of the gonads.

England

(G. C. TROUT).

Cod. About a thousand cod of all commercial sizes were marked by Lea tags in the southern and central North Sea. The resultant rate of returned marks suggests that the catch in the year is about one half of the average stock. Roughly 50,000 North Sea cod were measured and 1,000 otoliths taken at Grimsby and North Shields.

During 1956 only two cruises were utilized for the joint Anglo-Norwegian tagging programme, aimed at investigating fishing mortality. These resulted in only 1,372 cod being tagged on the Spitsbergen Shelf.

In addition, cod were measured at the Humber ports and taken in stratified sampling for age/length keys, as follows:—

Measured — 55,958
Otolithed — 2,131

Haddock and Whiting. Nearly 25,000 haddock and 26,000 whiting were measured at North Sea ports. In addition at Brixham 2,300 and at Milford Haven 2,200 whiting were dealt with. A small number of haddock and whiting were marked in the North Sea but no results are available yet.

Hake. Using effort, catch per unit effort, and length distribution but not age, it has been possible to estimate that, at the present intensity of fishing the best mesh would be over 85 mm. (compared with the present 75 mm.). With the present mesh a 50 % increase in yield could be obtained by halving the intensity of fishing. Over 84,000 hake were measured during the year on the fish markets at Milford Haven and Fleetwood.

France

(Institut des Pêches).

Merlan. Des observations biologiques ont été faites sur 24,000 merlans pêchés dans les régions de Trevose et de Small's (Mer Celtique et sud de la Mer d'Irlande) au cours de la campagne du "Président-Théodore-Tissier" en avril et en août 1956 (taille et âge, prélèvement d'otolithes, état de maturité sexuelle).

Merlu. Au cours de la campagne du "Président-Théodore-Tissier" en Mer Celtique et au nord du Golfe de Gascogne, 6,000 merlus ont été examinés (prélèvement d'otolithes); relation taille/poids; état sexuel).

Germany

(U. Schmidt).

Work at Sea

Saithe. Three of the cruises with the R/V "Anton Dohrn" in 1956 were devoted mainly to saithe investigations (3.I.—2.II.56: south-east, south-west, and north-west coasts of Iceland; 14.II.—10.III.: northern North Sea and Svinøy area, combined herring and saithe cruise; 15.XI.—12.XII.: north-west coast of Norway, Bear Island, and Hope Island). Investigations on the behaviour of saithe, and the length and age composition of the different stocks of saithe were continued in combination with growth-rate and maturity studies. The relations between abundance and hydrographical and meteorological conditions were also studied. The special investigations on the feeding over 24 hours were continued. The composition and quantity of stomach contents at different hours of the day were recorded, together with pH measurements inside the stomach and intestines. Special studies on the drift of eggs and fry and the development of eggs in the northern North Sea and Svinøy area were begun in February 1956.

Whiting. Investigations on the biology of whiting in the North Sea, commenced in 1954, were continued and provisionally concluded on a cruise with the R/V "Anton Dohrn" in April 1956. Special regard was paid to the growth and age composition and the density of the stock. In addition, the incubation period for the eggs and the development of the eggs and the development of the embryo were studied experimentally. Data for an estimate of fecundity based on egg production were collected. The vertebral number was evaluated for different parts of the North Sea.

During the cruise with "Anton Dohrn", the following observations on gadoid fish were made:—

	Length measurements	Age determinations
Saithe	808	8,463
Cod	666	279
Haddock	23,443	6,107
Ling, Trade ling and torsk	214	409
Micromesistius poutassou	4,742	140

Most of the length measurements and age determinations were combined with maturity determinations.

The second coalfish meeting was held (19.XI.56) on the occasion of the visit by "Anton Dohrn" to Bergen when tagging experiments and fishing mortality were the principal subjects of discussion.

Market Measurements

Market sampling of commercial landings was continued by the Institut für Seefischerei and the Biologische Anstalt Helgoland. The following observations were made on Hamburg and Bremerhaven fish markets:—

N. W. area

(Greenland, Iceland, Faroe waters)

	Length measurements	Age determinations	Weights
Cod	17,686	7,753	3,779
Haddock	4,595	1,503	—
Trade ling	450	—	—
Saithe	—	15,727	—

N. E. area

(Norway, Bear Island, Barents Sea)

Cod	11,749	5,072	3,829
Haddock	7,490	1,609	—
Saithe	—	13,004	—

North Sea

Haddock	10,290	1,949	—
Saithe	—	7,693	—

Iceland

(Jón Jónsson).

Work at Sea

The research vessel "María Júlía" made five cruises during the year. Four of these were devoted mainly to investigations in Faxa Bay, but on the fifth, extensive trawling experiments were made all around the coast. On all these cruises investigations on cod and haddock were also made.

Work on Fish

Cod. The spawning population was sampled from commercial catches made in three main fishing areas off the south-west coast. For stock analysis, 6,153 otoliths were taken and 20,004 fish were measured. In addition, 4,108 otoliths were collected and 7,013 cod were measured at 32 different localities around the coast, where trawling experiments were made. A total of 2,406 cod was marked at 18 localities. Some hundred otoliths were collected from Icelandic trawlers fishing in West Greenland waters.

Haddock. The material collected consists of 4,188 otoliths and 15,406 length measurements, and was obtained at various localities round the coast with the research vessel "María Júlía". A total of 3,012 haddock were marked at 14 different localities.

Netherlands

(L. K. Boerema).

Whiting. In 1956 whiting research was started on a limited scale. To this end two cruises were carried out with the "Willem Beukelsz", one in July to the northern and eastern North Sea, and one in December to the English Channel (the last one was a failure). Whiting samples were collected from as many areas of the North Sea as possible, for examination of the possible existence of different populations of whiting. From June onwards length measurements were made on IJmuiden market, and otolith samples were also taken once a fortnight.

Norway

(G. Rollefsen).

Work at Sea

Two cruises were made with the R/V "G. O. Sars" to the Barents Sea area, one in March—April and the other in October—November. The work consisted mainly of hydrography, echo-surveys of cod, and marking and sampling fish.

Work on Fish

Cod. The sampling of the Arctic cod was continued on approximately the same scale as in previous years. In Lofoten 32,000 fish were measured and 12,000 otolith samples obtained. The corresponding numbers for the Barents Sea area were 20,000 and 4,000.

1,500 "skrei" were tagged in Lofoten, while 1,840 tagged cod were released from the "G. O. Sars" at various positions in the Barents Sea.

In response to a request from the industry, an investigation of trap-caught cod from the Helgeland coast was started in 1956. 500 fish were marked in this area.

Haddock. Market and research vessel sampling was continued on a small scale. 113 fish were marked.

Saithe. Otoliths from about 1000 fish were obtained from western and northern Norway. 1,584 tagged saithe were released in Finnmark.

Poland

(St. Rutkowicz).

Cod. Only the Baltic cod was studied in 1956. St. Rutkowicz, investigated the state of the cod stocks in the eastern region, from Gdynia, and in the western region, from Kolobrzeg.

In the eastern region, namely, Gdansk Deep and Gdansk Bay, the Slupsk Furrow, and the fishing grounds on the Klajpeda slopes, 36 samples were collected for a racial analysis of 3,649 fish. The analysis concerned sexual maturity, age, length, and weight. The stages of 3,502 individuals were determined, and the lengths of 20,183 cod landed at the fishing ports were measured.

The quantitative and qualitative composition of the food of cod in the Gdansk region was examined.

In the western region 24 detailed analyses were carried out, and 2,266 fish weighing 1825 kg. were examined. 13,830 fish landed at the fishing ports were measured.

Only limited numbers of cod were tagged. In the eastern region 150 fish were tagged and released, and 80 were tagged in Pomorska and Kolobrzeg Bays.

Scotland

(R. Jones).

Work at Sea

In April 1956, after more than thirty years service the F.R.S. "Explorer" was replaced by a new and larger vessel, also named "Explorer". Between these two vessels the sampling of the North Sea haddock and whiting stocks was continued as usual, cruises in March, April/May, July/August, and November being designed specially to link up as far as possible with the four similar surveys done in 1954 and 1955. In June, a comparative fishing experiment between the two vessels was arranged so as to obtain conversion factors for the catches of the more important demersal species. In August—September, the new vessel undertook a survey of the demersal fish stocks at Iceland, preliminary to the more intensive investigations planned for 1957. Experiments were undertaken in January and February with Icelandic and pelagic trawls and also a "pick-a-back" trawl designed for investigating the vertical distribution of fish near the bottom. Further data have been obtained on mesh selection. At different times during the year, a

total of 346 haddock and 295 whiting was tagged and liberated off the east coast of Scotland.

A limited amount of trawling was done by "Scotia", chiefly to the west of Scotland, but this was incidental to the work done by the two "Explorers".

Work on Fish

Cod. Further cod stomach material was collected during 1956.

Haddock. Data collected from the fish market in respect of Faroe grounds will be made available in *Annales Biologiques*, Vol. XIII. Further work on the dynamics of the Faroe haddock population is under way and population studies of the North Sea haddock stocks have been continued, particularly in relation to estimating movement and natural mortality.

Whiting. Whiting otoliths have been collected during all routine trawling surveys and progress has been made in using them for age determination.

Spain

(J. Cuesta).

Hake. At Vigo Laboratory (I.I.P.) studies were carried out on the ovary of the hake (*Merluccius merluccius*) and the spawning processes of this fish.

Sweden

(G. Otterlind).

Cod. In the latter half of March a few samples of cod were collected in the southern part of the Baltic. Some samples were collected on cruises with the "Eystrasalt" and commercial catches from the Bothnian and Åland Seas were measured in July—September. Tagging operations in the Åland Sea were continued. 303 fish were tagged with ebonite disks, marked with the letters SvÖ and a number; 222 fish were marked with the Lea tag. In November, 82 fish were tagged with ebonite disks on the Ångermanland coast.

U. S. S. R.

(T. Dementjeva).

Cod. Observations were made in April on the distributions of spawning cod and of their eggs and larvae in different water layers on the spawning grounds in Gdansk and Gothland Deeps. The ratio of dead to living embryos under various temperature and salinity conditions was also studied, as well as the distributions of feeding and non-feeding larvae in different water layers.

Catches of cod fry were made with a 27 m. herring trawl with a cod-end mesh of 10 mm.

Cruises were undertaken in March—April and September—October to study the distribution and composition of the stock of Baltic cod.

Publication

Andreu, B., 1956: "Observaciónes sobre el ovario de merluza (*Merluccius merluccius*) y caracteristicas del mecanismo de la puesta". Invest. Pesq., **4**: 49—66.

Herring Committee

1956

By Olav Aasen

Belgium

(Ch. Gilis).

The study of the herring concentrations exploited by the Belgian trawlers was continued. Observations were made on:—

1. The full-herring concentrations in the northern and central North Sea in August, October, and November (795 herring).
2. The spent-herring concentrations in the southernmost part of the North Sea in January and February, at the end of the 1955—56 season (635 herring), and in December, at the beginning of the 1956—57 season (335 herring).

The observations cover length, weight, sex, stages of maturity, mesenteric fat, age, vertebrae, keeled scales (K_2), and stomach contents. A detailed study of the operations of the trawlers in regard to both fishing and landings has also been made for each of these two groups.

Denmark

(Å. Vedel Tåning).

Greenland Waters (P. M. Hansen).

Fishing experiments with drift-nets and seines were carried out with the "Adolf Jensen" in the Sukkertoppen district and with the "Immanuel" in the

Julianehåb and Nanortalik districts. Samples of otoliths, scales, and stomach contents were obtained, and length measurements were made.

North Sea

In the course of experimental trawling for whiting, samples of adult herring were secured; these were examined for length, age, and meristic character.

Investigations on the biology of the young herring in the eastern North Sea—especially the Bløden area —were continued; samples were taken from the commercial landings at Esbjerg and continuous market measurements were carried out with the assistance of the fishery control stations at Esbjerg and Thyborøn.

Inner Danish Waters

In order to study the extent of the herring spawning on certain spawning grounds, a few hauls with a ringnet were carried out in the Belts and southern Kattegat in April, and in the northern and central Kattegat in November.

About 30 samples of small herring used for fish meal and 10 samples of herring fished for consumption were examined for length, age, maturity, race, and, in some cases, fat content.

England

(D. H. Cushing).

Samples of fish were taken twice a week during the Shields fishery from May to September. These were worked up with effort statistics to give an age distribution in numbers per effort of each age-group.

During the East Anglian fishery samples were taken each day on the market and were worked up into an age distribution in the same way.

Cruises with R/V "Sir Lancelot" were carried out in the Dogger area in August and September to find the degree of diurnal variation in the composition of trawl catches. Cruises were made with R/V "Platessa" from mid-September to mid-November between the latitude of Whitby and Flamborough Head to determine the pattern of movement through the East Anglian fishing by means of echo-survey. Four cruises with the "Sir Lancelot" were made in November and December to survey the Southern Bight and eastern Channel for herring larvae.

Finland

(Erkki Halme).

Investigations on the biology of the small Baltic herring were continued by trawling and echo-sounding in the Gulf of Bothnia and northern Baltic.

Investigations on the fat content of the small Baltic herring at different seasons of the year were carried out by T. Pesonen.

France

(Institut des Pêches).

Les recherches sur le hareng pêché dans le sud de la Mer du Nord et en Manche orientale ont été poursuivies. Les observations ont porté sur la taille, l'âge, la maturité sexuelle, la moyenne vertébrale. Elles ont montré la persistance des faits observés les années précédentes sur la forte proportion des harengs de 3 ans, et la modification dans l'âge moyen du recrutement.

Des statistiques de pêche effectuées par les chalutiers boulonnais en 1956 en Mer du Nord ont été établies par mois et par régions.

Germany

(A. Bückmann).

The R/V "Anton Dohrn" made three cruises for herring research work in the North Sea:—

1. 14. February—10. March, northern North Sea, between 57°00′ and 62°30′ N., and 2° E. and 4° W.
2. 29. August—12. September, and
3. 15.—28. October, central and southern North Sea, between 51°20′ and 56°48′ N., and 7° E. and 1°42′ W.

On all cruises, herring populations were studied together with the hydrographical conditions in the area, and observations were made on the behaviour of the herring in different bodies of water.

On cruises 2 and 3, herring taggings were undertaken (1,201 and 500 herring, respectively, were marked). In addition, 231 spring-spawning inshore herring were marked in the mouth of the Elbe during May. Only 8 tags of German origin were returned during the season.

In 1956 investigations of the herring populations of the different areas of the North Sea were continued on the same lines as in previous years. 90 samples, comprising 6,093 herrings, were taken from commercial catches by trawlers, drifters, and the R/V "Anton Dohrn" and analysed at sea. In addition, 16 samples, comprising 1600 herring, were taken on the fish market. 20,000 herring were measured. Samples were obtained from the following areas: Ling Bank to Viking Bank, Svinøy, Otter Bank, Bressay, Fladen, Gut, off the east coasts of Scotland and England, Dogger Bank, Southern Bight, Sandettié, Channel, Clay Deep, and Elbe estuary.

All the material collected earlier was worked up.

(Institut für Seefischerei).

Observations were made on the so-called oil-herring fishing; these related to effort, yield, season and area of fishing, and distribution of landings, and composition of catch (herring 80 % by weight, sprat 5 %; whiting 7 %, haddock 4 %; various species 3 % (mackerel, dab, cod, etc.)). The increase in the proportion of whiting, haddock, and cod was found to have been brought about by the high abundance of

the 1955 year-class; 6·7 % by weight consisted of species and sizes protected by the International Fisheries Convention. (Institut für Küsten- und Binnenfischerei).

The distribution and abundance of herring larvae was investigated on a cruise with the "Anton Dohrn" in April 1956. The meristic characters of young herring of the 1956 year-class caught in the Jade were examined. (Biologische Anstalt Helgoland).

Iceland

(Árni Friðriksson).

During the last days of May and in June the R/V "Ægir" participated in the international herring research programme in the waters between Norway and Greenland, co-operating with Danish and Norwegian research vessels. The vessel was also in action during July and August, assisting the fishing fleet in the search for herring off the north and east coasts.

The laboratory in Siglufjord was run as usual, and by the same staff as in previous years. 3,535 herring were measured and 3,285 were investigated with regard to sex, maturity stages, weight, intestinal fat, V.S., and maturity factor (M.F.). Scales were also collected for later examination of age, growth, and type. In addition, 8,260 tagged herring were measured. More than 800 herring stomachs were examined for food contents.

The same boat as in previous years was chartered for tagging herring, and off the north coast 8,443 herrings were tagged externally.

Netherlands

(J. J. Zijlstra).

Samples of spawning herring were obtained in the same manner as in 1955; they were obtained from the catches of commercial trawlers fishing on the spawning grounds in the Dogger and Sandettié regions and in the English Channel. Only herrings at maturity stage VI were taken. The aim of this programme was to obtain reliable figures for age distribution in the spawning stocks. The data were also used for racial studies. The herring observations covered age, length, weight, sex, otolith structure, and number of vertebrae. In addition, herrings at stage V were collected from catches made in the vicinity of the spawning grounds, in order to study fecundity.

In 1956 the drift-net catches in the East Anglian region and the English Channel were analysed for the first time for age and length composition.

Samples of I-group herring were collected in spring and autumn, and their otolith structure examined, for studying the dispersal of the fry from the spawning grounds.

The work on drift-net statistics (herring charts) was continued. A special study was made of the catch per unit of effort in different regions of the North Sea for the years 1947—1955. A similar study was made for the herring-trawl catches.

In July a cruise was undertaken with the "Willem Beukelsz" to the central and northern North Sea. The distribution of the herring was studied, in relation to size and population numbers.

Norway

(Olav Aasen).

General Work

During 1956 the general work of securing samples for studying fluctuations, length, weight, Vert. S., maturity, etc., was continued. 37 samples of winter herring, comprising 6,700 fish, were collected. During the summer cruise in the Norwegian Sea with the R/V "G. O. Sars" 8 samples, comprising 877 herring, were examined. In addition, 11 samples of fat herring (998 fish) were secured during the summer in the coastal waters between Finnmark and Hordaland. In all, 56 samples, totalling 8,575 herrings, were examined.

Cruises

In January the R/V "G. O. Sars" followed the herring migrating towards the Norwegian coast. The positions of the approaching shoals were transmitted to the fishermen. In May—June Dr. Wiborg investigated the plankton off the Norwegian coast; the concentrations of herring larvae at this time were small.

The summer cruises with the R/V "G. O. Sars" in the Norwegian Sea were carried out from 5. June to 2. July and from 12. August to 9. September. The first of these cruises was made in collaboration with Iceland and Denmark.

In December the R/V "G. O. Sars" investigated the area between the Faroes and the west coast of Norway. A few recordings of herring were reported.

Tagging Experiments (Olav Dragesund).

In all, 18,847 herring were tagged on the Norwegian coast in 1956. These bring the total number tagged since 1948 to 215,486. Of the herring tagged in 1956, 4,998 were large herring, 6,299 "forfangstsild" (a mixture of recruit spawners and fat herring), and 7,550 fat herring. A total of 100 were double tagged (internal steel tag and Lea's hydrostatic tag), 950 with Lea tags, and 17,797 with the internal tag.

In 1956, tags were recovered from 2,359 fish. Of these 2,237 were internal tags (590 Icelandic and 1,626 Norwegian tags), 80 external, and 42 double tags.

Scotland

(B. B. Parrish).

Scottish herring work in 1956 was directed along the following main lines:—

1. The continuation of long-term studies of the "racial" biology and population dynamics of the stocks of herring fished by Scottish fleets in

the northern North Sea and off the west coast of Scotland.
2. Studies of the composition and movements (by tagging) of adolescent herring from the nursery grounds off the Scottish coasts to the offshore fishing grounds.
3. Further investigations of the features of the environment over the herring fishing grounds (in co-operation with the staff of the S.M.B.A. Oceanographic Laboratory, Edinburgh).
4. Further attempts to rear young herring hatched in the aquarium, and studies of the responses of herring larvae to external stimuli, especially light and temperature.
5. Surveys of larval production on the Scottish east coast spawning grounds and investigations of their subsequent dispersal from the spawning grounds.
6. Herring trawling trials over the summer drift-net fishing grounds.
7. Experiments to study the response of adolescent and adult herring in the field to artificial light stimuli.

Data for long-term biological and dynamical studies were obtained, as in earlier years, from routine sampling of the commercial catches landed at the major herring ports along the east and west coasts of Scotland. These included length and age data for growth and mortality studies, otolith and Vert. S. data for racial studies and statistics of catch and effort for dynamical assessments. Details of the statistics of the fisheries in 1956 and of the stock composition in the different fishing regions, obtained from these data, are given in *Annales Biologiques*, Vol. XIII. The main tagging programme in 1956 was again conducted from commercial fishing vessels and was centred principally on the adolescent stocks of herring in the upper reaches of the Moray Firth in March 1956. 1,117 tags were liberated in this area from which 20 recaptures were obtained, 19 from the tagging vicinity in the subsequent weeks and one from the open sea fishery in the north-western North Sea in the summer months. Open sea tagging was conducted in the north-eastern North Sea in April and May, in the Shetland area in June and July, in the North Minch in February, and April and on the Clyde spawning grounds in February and March. Information on recaptures from these experiments are given in Ann. Biol., XIII.

F.R.S. "Clupea" carried out 4 hydro-biological surveys in the north-western North Sea in the period April—September, and further surveys of the North Minch and Clyde regions in the period October—December. Data obtained from these surveys are reported on in Ann. Biol., XIII.

Herring larvae were again hatched from artificially fertilized eggs in the spring and autumn of 1956, but although some larvae took food after the stage of yolk-sac absorption none was reared to the stage when vertebrae were formed. The effects of temperature on meristic characters were therefore gauged, as in previous experiments, from myotome counts. Observations were made during these experiments on the responses of larvae to temperature and light gradients. Behaviour responses were recorded with both stimuli.

Trawling tests on the concentrations of the herring in the drift-net fishing area in the north-western North Sea provided no large herring catches, but large catches of white fish.

An intensive study of the changes and trends in the composition and size of the herring stock fished in the north-western North Sea was made in 1956. Changes in stock composition, density, and growth characteristics were detected and were found to be similar in character and timing to those observed in the southern North Sea. All available evidence pointed to these changes being caused chiefly by environmental factors affecting "availability". Details of these changes were presented at the special meeting of the Herring Committee in Copenhagen in October 1956, ("Recent Changes in the North Sea Herring Fisheries", by B. B. Parrish and R. E. Craig).

Particular attention was also paid in 1956 to "racial" studies of herring in the north-western North Sea and off the west coast of Scotland. Results of these investigations were presented at the Special Scientific Meeting on "Herring Races" at the meeting of the Council in October 1956.

Sweden

(Hans Höglund).

Skagerak and the North Sea

Examinations were made of samples (1) from the winter fishery in the open Skagerak, (2) from the spring fishery on the spawning grounds along the Bohuslän coast, and (3) from the summer/autumn fishery in the North Sea. Altogether, 3,000 fish were examined for length, weight, sex, stage of maturity, mesenteric fat, stomach contents, total number of vertebrae, keeled scales, and gill rakers.

In late September and early October 400 herring were tagged with the Lea tag on the northern part of the Dogger Bank.

The Baltic (G. Otterlind).

About 20 samples comprising ca. 1,200 herring, mostly from the Gulf of Bothnia, were examined. Hauls for herring larvae were made with stramin and silk nets in July and August in the Bothnian and Åland Seas.

A total of 1,887 herring were tagged with Lea tags, 600 in the Piteå area in June, 427 in the Umeå area in July, 599 at Axmarby (N. of Gävle) in June, and 261 at Saltsjöbaden near Stockholm in May.

U. S. S. R.

(T. Dementjeva).

Four cruises, each of 10 days duration, in the south-eastern part of the Baltic, were devoted to the

study of the horizontal and vertical distributions of spring-spawning Baltic herring, during their spawning migrations, in relation to environmental conditions. Detailed echo-sounding surveys and control trawl hauls were made on each cruise.

The conditions of the Baltic herring stock was assessed in the major bays of the eastern Baltic and in the waters of the Estonian SSR. Some data were also obtained on the characteristics of the industrial stock of sprat.

A study was made of the relation of the development of the fishery to the variation in herring catch in the Gulf of Riga.

Publications 1956

Brandhorst, W.: "Über Laichen und Aufwuchs des Frühjahrsherings im Nord-Ostsee-Kanal". Kieler Meeresforsch., **12**.

Hamdorf, K.: "Über die Verwendbarkeit der Schwanzwirbelverknöcherung der Heringslarven als Unterscheidungsmerkmal bei der Populationsanalyse." Kruze Mitt. Inst. Fischereibiol., Hamburg, **6**: 10—21.

Tiews, K.: "Untersuchungen über die deutsche Ölheringsfischerei in der Nordsee im Jahre 1955." Arch. f. Fischereibiol., **7**: 47—60.

Zijlstra, J. J.: "De Engelse Walvisserij." Visserij Nieuws, **8** (11).

Sardine Committee

1956

By J. Cuesta

Belgium

(E. Leloup).

Sardine

Biological observations were made on the sardines caught occasionally with the herring in October and November in the southern North Sea. These observations covered all biological values—length, weight, sex, stages of matutiry, mesenteric fat, age, vertebrae, keeled scales (K_2), and stomach contents.

Denmark

(Aa. J. C. Jensen).

Sprat

Samples from the commercial fishery were examined in order to determine the percentage of sprats present, their length and age distributions, and racial characters.

England

(D. H. Cushing).

Sardine

Two cruises were made with the R/V "Platessa" in Cornish waters in March and April to try to catch pilchards with a nylon mid-water trawl. Echo-surveys in the region were also made.

Finland

(Erkki Halme).

Sprat

Samples of sprat were collected in the Gulf of Bothnia and the northern Baltic for biological study.

France

(Institut des Pêches).

Sardine

Les populations de sardines de la Bretagne à la côte basque ont été étudiées pendant la saison de pêche: la taille, l'âge, la taille à L_1, la moyenne vertébrale ont été déterminés sur environ 2000 exemplaires.

Trois bateaux-pilotes-de-pêche armés par l'Institut des Pêchés ont detecté aux sondeurs U.S. les bancs de sardines du mois de mai à novembre en Bretagne, en Vendée et le long de la côte basco-landaise signalant chaque jour aux pêcheurs la présence des bancs de poissons.

Le navire océanographique "Président-Théodore-Tissier" a observé la présence de grosses sardines jusqu'à la profondeur de 140 m. et d'œufs dans le plancton de surface en avril de Melville à 47° N.

Germany

See Plankton Committee, p. 47.

Ireland

No investigations have been carried out.

Norway

(G. Dannevig).

Sprat

The investigations on the abundance and distribution of the newly hatched larvae were continued in order to locate the spawning grounds and to study stock recruitment in Norwegian waters.

Attempts were also made to study the occurrence of sprat in the open waters of the Skagerak by means of the echo-sounder.

The age and growth were determined of the fish in samples obtained from commercial catches.

The number of vertebrae was determined in an attempt to identify different populations in Norwegian waters.

Poland

(W. Cieglewicz).

Sprat

In the central Baltic the number of samples collected and fish examined are tabulated below:—

Region	Number of samples	Number of fish measured	Number of age determinations
Gdansk Bay.....	24	6,716	731
Klajpeda region	1	23	23
Kolobrzeg-Darlowo region	8	1,374	263
Pomorska Bay.....	1	181	26
Total	34	8,294	1,043

Fat content was determined in the following samples:—

Gdansk Bay	72
Klajpeda region.....	1
Kolobrzeg-Darlowo region ..	3
Total	76 samples

Portugal

(J. de Santos Pinto).

Sardine

Continuation des observations selon le programme des années antérieures (taille, poids, écailles, vertèbres, maturité sexuelle), sur matériel provenant de Leizões, Lisbonne et Portimão.

Etude du poids moyen, par classe de taille, en vue de l'élaboration d'une courbe de régression taille/poids (données concernant les années 1952—56, totalisant 42,736 exemplaires). Etude de l'indice de condition pour les mêmes années.

Elaboration d'une échelle de maturation sexuelle pour les mâles, basée sur l'étude histologique des testicules.

Etude d'une parasitose testiculaire par le Coccidie *Eimeria sardinae* (Thélohan) susceptible de produire, dans certains cas, la castration totale de la gonade.

Spain

(J. Cuesta).

Des observations systématiques ont été poursuivies selon le plan des années précédentes (taille, poids, écailles, vertèbres et maturité sexuelle) dans les laboratoires côtiers de St. Sébastien, Santander, Vigo, Cadix et celui des îles Canaries pour la sardine; St. Sébastien et Santander pour l'anchois, et Vigo pour le sprat.

Les branchiospines de la sardine ont été l'objet d'un étude spécial au laboratoire de Vigo (I.I.P.).

Dans la région de Santander le procès de la ponte de la sardine et de l'anchois a été poursuivi d'après la présence de ses œufs dans le plancton, ainsi que les observations sur le parasite de ces deux espèces: *Scolex polymorphus* Rud.

U. S. S. R.

(T. Dementjeva).

Sprat

Observations were made in the eastern Baltic on the distribution of sprat eggs and larvae, and on the ratio of dead to living embryos. For this purpose a truncated bolting silk (No. 150) net was used with a mesh size of 0·569 mm. and an inlet opening of 0·5 m². (80 cm. diameter).

In 1956 quantitative estimates were made of Baltic herring larvae in the Gulf of Riga and the Vistula estuary and of the number of cod fry in the Klajpeda-Pionersk region. Hauls were made with the Hensen net and the Rass trawl for herring larvae.

Publications 1956

Andreu, B., & Santos Pinto, J.: "Caracteristicas histológicas y biométricas del ovario de sardina (*Sardina pilchardus* Walb.) en la maduración, puesta y recuperacion. Origen de los ovocitos". Invest. Pesq., **6**: 3—38.

Arté, P.: "Observaciones biologicas sobre el espadin (*Clupea sprattus*) del NW. de España (Ria de Vigo)." Invest. Pesq., **3**: 21—44.

Machado, J. A.: "A sardinha do Norte de Portugal (*Sardina pilchardus* Walb.). Caracteristicas etárias e de reproducçao." Notas e Estud. Inst. Biol. Marit., **14**.

Santos Pinto, J., & Andreu, B.: "Algunos áspectos del desarrollo inicial del ovario de sardina (*Sardina pilchardus* Walb.)". Invest. Pesq., **5**: 3—12.

Santos Pinto, J., & Andreu, B.: "Echelle pour la caractérisation des phases évolutives de l'ovaire de sardine (*Sardina pilchardus* Walb.), en rapport avec l'histophysiologie de la gonade". C.G.P.M. Proc. & Tech. Pap., **46**.

Santos Pinto, J.: "Parasitic castration in males of *Sardina pilchardus* (Walb.) due to testicular infestation by the Coccidia *Eimeria sardinae* (Thélohan)". Rev. Fac. Cien. Lisboa, Ser. 2, **5** (2): 209—24.

— "Essai d'une échelle de maturation sexuelle pour les mâles de la sardine (*Sardina pilchardus* Walb.) basée sur l'histologie des testicules". Notas e Estudos, **15**.

Comité des Poissons Scombriformes

1956

Par A. M. Ramalho

France

(Institut des Pêches).

Scombridés

Les recherches sur le maquereau de la Mer du Nord ont été continués.

Il a été constaté un retard dans la période de ponte et une diminution de l'importance des concentrations d'été, deux faits qui semblent liés aux basses températures de 1956.

Entre Melville et le 47° L.N. les maquereaux pêchés par le "Président-Théodore-Tissier" en avril et en août ont été examinés (tailles, rapport taille — poids, maturité sexuelle).

Thonidés

L'étude du germon (*Germo alalunga*) a donné lieu à une campagne de prospection en mai et juin 1956, effectuée entre les Açores, la péninsule ibérique et le Golfe de Gascogne par le "Président-Théodore-Tissier".

Les conditions hydrologiques d'apparition des premiers germons ont été étudiées: le retard dans le réchauffement des eaux superficielles a coïncidé avec une remontée vers le nord des thons blancs plus tardive qu'à l'ordinaire.

Une carte des lieux de pêche du germon en juin, d'après les observations effectuées regulièrement de 1950 à 1955 a été distribuée aux pêcheurs.

Publications 1956

Letaconnoux, R., & Dardignac, J.: "Un thonier de type californien dans les eaux françaises d'Afrique". Rev. Trav. Inst. Pêches Marit., **20** (1).

Doutre, M.: "La pêche du thon à l'appât vivant en Californie". Ibid., **20** (4).

Postel, E.: "Essai sur la Palomette *Orcynopsis unicolor* (Géoffroy St-Hilaire 1809)". Bull. Inst. Français, Afrique Noire, **18**.

Salmon and Trout Committee

1956

By Arthur E. J. Went

Denmark[1])

(Knud Larsen).

Biological investigations included:—

(a) Tagging and marking experiments. In 9 localities 29 stripped salmon and 389 sea trout, viz., 277 stripped fish, 79 spawning fish and 33 finnock, were tagged by means of celluloid tags. Fifty-nine brown trout were tagged in the same way before being liberated into brackish water (Randers fjord).

(b) Analyses of the stock of young trout and stationary trout by means of D.C. electrofishing were made in the upper course of the river Vidå (South Jutland).

(c) The sea trout run in the river Brønså (West Jutland) was studied in the fish pass at the "Danish Trout Pond Farmer's Experimental Station" and by means of D.C. electrofishing in 2 streams in Seeland.

(d) Analyses of the sea trout run as to age, sex, etc. were made by means of D.C. electrofishing in 2 streams in Seeland.

(e) Analyses of the stocks of *Coregonus lavaretus* as to age, growth, food, etc. were made in the Ringkøbing fjord and Nissum broads (West Jutland).

(f) Salmon investigations in the Baltic. Length measurements of commercial catches were carried out and scale samples were collected.

[1]) Salmon and char in W. Greenland waters, see Distant Northern Seas Committee, p. 6.

Finland

(E. Halme).

Investigations were made into the migrations and populations of *Salmo trutta* and *S. trutta fario* in the Isojoki River system in Western Finland by Mr R. Ryhänen.

France

(R. Vibert).

(a) **Recherches physiologiques et biologiques.** Les travaux de marquage de smolts commencés en 1951 n'ont pu être poursuivis en 1956 par suite de niveaux d'eau défavorables.

(b) **Propagation artificielle du saumon.** La récolte en décembre 1956 a été a peu près nulle du fait des niveaux d'eau constamment défavorables.

(c) **Prises de saumons.** Campagne mauvaise en 1956 sur l'Adour pour les saumons d'hiver. Très bonne pour les saumons de printemps.

Germany

(R. Kändler).

In the spring of 1956, 85,000 fry of sea trout were liberated in small rivers flowing into the western Baltic. The collection of statistical data on the drift-line salmon fishery in the south-eastern part of the Baltic was intensified to obtain a complete survey on the age and size composition of stock, and the yield of the fishery. A report on this investigation is about to be published in Ber. Deutsch. Wiss. Komm. Meeresforschung.

Iceland

(Th. Gudjónsson).

Marking and tagging of salmon and sea trout in Iceland was continued during 1956. Salmon smolts (768 in number) were marked and tagged in the river Úlfarsá. Of these 589 were marked by cutting off two fins and 179 were tagged with the new Swedish smolt tags, which were supplied by the Migratory Fish Committee through the courtesy of Dr. B. Carlin. Sea trout smolts numbering 309 were marked by cutting off two fins. Salmon kelts numbering 74 were tagged in the autumn of 1956 at the river Ellioaár and 6 sea trout kelts and 77 sea trout kelts in the spring in the river Úlfarsá. One salmon kelt and 54 sea char kelts were tagged in October in the river Víoidalsá on the north coast of Iceland. The Lea hydrostatic tag was used for tagging all kelts. Other work than marking and tagging was continued along the same lines as in previous years. Hatchery operations were carried out in the same manner as before. Fry and one-summer-old salmon parr were liberated into several rivers. The salmon catch was about average.

Ireland

(A. E. J. Went).

During 1956 material from the River Shannon for the years 1952 to 1956 was examined and a report prepared. Material from the Rivers Moy, Corrib, Erne, and Lee for 1956 was also collected and examined. Tagging of clean salmon in the sea from Downings, Co. Donegal, from commercial drift-net vessels was again carried on and clean fish were also tagged in the estuaries of the River Feale, Ilen, and Shannon with a view to observing the behaviour of salmon moving up the estuaries. Kelts of salmon and sea trout were tagged at a number of centres during the year. Officers of the Fisheries Division again collaborated with officers of the Ministry of Commerce, Belfast, into research of the salmon and sea trout of the River Foyle system and their reports will appear as appendices to the Foyle Fisheries Commission Reports.

The catch of salmon was approximately 660,000 kg. compared with approximately 570,000 kg. for the previous year, sea trout catches amounted to approximately 42,000 kg. compared with 33,000 kg. for the previous year. The 1956 season was generally characterized by fairly heavy rain. The runs of spring fish were again poor even compared with those of 1955 in which year all groups of spring fish were scarce. The grilse run was again very much later than had been usual prior to 1952 and it appeared to have been very much larger than the past few years but because of continuous rainy weather, conditions for netting were poor and in consequence the catches were poorer than they would have been in a more normal season.

During the season conditions for the artificial propagation of salmon and trout were favourable and the output of fry in thousands was salmon, 2,542; sea trout, 155; and brown trout, 1,789. Supplies of brown trout ova were also imported from Great Britain.

The Salmon Research Trust of Ireland, established in 1955, started operations on the Burrishoole River in the west of Ireland and at the close of the period under review a small laboratory on the shores of one of the lakes in this River system was being erected.

Netherlands

No work done on salmon or trout in this country.

Norway

No report received.

Poland

(W. Mańkowski).

(a) The Sea Fisheries Institute in Gdynia collected the scales of 540 salmon caught in the Baltic. The fish were weighed, measured and the sex was determined. Two hundred specimens were measured and the scales collected from sea trout caught in the coastal waters of the Baltic.

(b) Workers at the Fisheries Department of the Higher Agricultural School in Kraków collected in the estuary of Vistula during the period May 1 to November 30 the scales and measurements of 370 trout migrating to the spawning grounds. Some of these, 41 in number, were sectioned. In October and November the scales were collected from and measurements made of 200 trout on the Dunajec and Raba spawning grounds. Determinations of age and growth from scales collected in the former years were made as follows:—

1. From 1951—the winter trout spawning in the Dunajec—287 specimens.
2. From 1951—the winter and summer trout entering the Vistula—835 specimens.
3. From 1952—the winter trout spawning in the Rudawa—254 specimens.
4. From 1954—the winter trout spawning in the Dunajec—209 specimens.

(c) The Research Institute of Freshwater Fishery in Olsztyn carried out the following investigations:—

1. The further study on the population of salmon and sea trout in the Vistula system. The aim of these studies was to determine the age, structure and rate of growth. For this purpose the body measurements and scales of about 1,300 specimens were collected. The places of collection were similar to those of previous years, namely:—

(i) the mouth of the Vistula and the Bay of Gdansk from 1. November to 8. December.
(ii) the middle part of the Vistula throughout the year, and
(iii) the spawning places of the rivers Raba and Dunajec from 26. October to 16. November.

2. Observations were made on spawners of sea trout and salmon held in small ponds from September to November using malachite green for the control of fungus (*Saprolegnia* sp.) on the fish. This prophylactic treatment on trout and salmon decreased mortality in the holding ponds.

3. In order to devise a method of distributing fry and fingerlings reared in hatcheries conditions in 700 km. of the streams in the system of the river Raba were determined.

4. As in the years 1954 and 1955 data were collected relating to the trout in Lake Wdzydze, Central Pomerania (this is possibly a land-locked form of sea trout). During the past three years the following material relating to this trout was collected:—

(i) about 250 specimens of parr from a stream where spawning places had been observed and fry had been planted, and
(ii) about 1,500 adult specimens taken during the feeding and spawning periods. Spawners, numbering 350, were also tagged. About 20 per cent. of these were recaptured in the same lake and in the stream where they had been tagged.

Spain

(J. Cuesta).

During the year 1956, fry of salmon (358,000) and trout (122,700) was distributed in the different rivers of the province of Asturias. In the province of Santander, the repopulation was carried out by means of Vibert boxes, each one containing 800 eyed ova approaching hatching. Samples of scales of the captured salmon were taken for studying their age and growth.

United Kingdom

I. England and Wales

(F. T. K. Pentelow).

(a) Salmon and Sea Trout caught at Sea

During the present season the collection of data on salmon and sea trout caught by commercial fishing boats at sea has been continued.

(b) Salmon Experiment, River Axe, Devon

Since the end of 1955 an experiment has been in progress on the River Axe in Devon into the salmon stocks of that river. It is envisaged that this investigation will continue for at least ten years. Work so far has been confined to the operation of temporary traps, in order to gain experience of local conditions, but a permanent trap has now been designed and it is anticipated that this will be installed during the present summer.

(c) Salmon and Sea Trout Experiment, River Coquet, Northumberland

Salmon and sea trout kelts and smolts have again been studied in the River Coquet, using the trap installed in previous years at the head of the tideway. The kelts were not tagged during the last season but the smolts of both species have been tagged and also fin-clipped, in order to gain information on the loss of the tags by the fish. In connexion with this experiment, observations were also made on the sea trout caught commercially by beach-seining at Hemsby, in Norfolk.

(d) Salmon Stocks

Collections of salmon scales have again been received from various sources and analysed.

(e) Research on the Physiology of Salmon and Sea Trout

A Senior Treasury Research Fellow, Dr. Gwyneth Howells, is now working in the Department on the physiological changes in the blood of salmon and sea trout during their migrations to and from salt water.

(f) Anaemic Disease of Rainbow Trout

Experiments have been carried out on the effects of various diets in causing the incidence of the anaemic disease in rainbow trout. Attempts have been made to carry out crossinfection between infected and healthy batches of fish without success.

II. Scotland

(K. A. Pyefinch).

Work on the modified scheme of salmon research, initiated during the autumn of 1955, has progressed less rapidly than was anticipated, largely because it did not prove possible to erect the traps on the tributaries of Lui Water. The lack of these traps

meant that it was only possible to make general observations on the migrations of fry and parr, instead of investigating their movements in detail. The occurrence of the latter was not, however, wholly disadvantageous, as it allowed observations to be made on Lui Water and its tributaries under such conditions. These observations indicated that it should be possible to maintain traps in these streams even during heavy spates.

A temporary fence and trap were erected below the falls on Lui Water during the late summer and some of the fish caught were impounded so that they could be stripped later to provide eggs for planting in the tributaries of Lui Water. Three hundred and one perspex boxes (containing approximately 150,000 ova) were planted. The unusually open weather during the early winter has enabled the planting sites to be kept under regular observation.

Observations on the spawning migrations of sea trout and salmon were again made during the autumn of 1956 in the Cannie Burn. For this year's observations, the box-type trap used in 1955 was replaced by a grid-type trap and this new trap has worked very well. The heavy spates during the late summer and early autumn delayed the erection of this trap until mid-October but from then onwards until mid-December 145 salmon and 886 sea trout passed upstream. These totals are substantially less than those recorded during the runs of 1955, but many fish could have migrated upstream before the trap came into operation. It is planned, therefore, to keep this trap in operation at least for the rest of the winter so as to estimate the number of upstream migrants from the numbers of untagged kelts moving downstream.

As in 1955, fish taken in the Cannie trap were transferred, after tagging, to other sites on the Dee to test their homing behaviour. This year, only sea trout were transferred but transfers were made, not only to sites on near-by tributaries lying upstream and downstream from the Cannie Burn, but also to a number of sites on the Dee itself, ranging from a point only a short distance above the tidal limit to one in the upper reaches of the river, some 40 miles upstream from the confluence of the Cannie and the Dee. The results of this experience were generally much the same as those recorded from the 1955 experiment, namely that some sea trout returned to the Cannie from practically all the sites to which they had been transferred. It is remarkable that these returns included fish which had been transported 40 miles upstream.

Female salmon kelts which had been stripped to provide eggs for the hatcheries operated by the North of Scotland Hydro-Electric Board at Invergarry and Contin were again tagged at the traps at Loch Poulary and Loch na Croic respectively. One particularly interesting recapture from the kelts tagged during the corresponding operations in 1955 should be mentioned. This fish, tagged at Loch na Croic in November 1955 was recaptured off the south-west coast of Greenland in October, 1956.

The statutory diagnostic services for furunculosis and the research work on furunculosis, Dee disease, and other salmonoid diseases were transferred from the Bacteriology Department, University of Aberdeen to the Department's Marine Laboratory, Aberdeen, during the year. During the twelve months ended September 30th, 1956, 62 fish (28 salmon, 32 sea trout, and 2 brown trout) were received for examination and of these 19 (18 salmon and 1 sea trout) were found to have died from furunculosis, 5 salmon were found to have died from Dee disease, and 8 sea trout showed either wounds or healed wounds of the type mentioned in last year's report. In addition to these records, 31 salmon were reported to have died from furunculosis and 7 of Dee disease. The fish found to have died from furunculosis came from six rivers but the outbreak of this disease could only be regarded as at all extensive on two of these, the Rivers Carron and Meig. The outbreak of Dee disease on the Aberdeenshire Dee was smaller in 1956 than it was in 1955. Research work during the year has principally dealt with further work on the organism which is suspected to be the cause of Dee disease and attempts to isolate *Bacillus salmonicida* from samples of river water taken during an outbreak of furunculosis.

No further additions of mineral fertilizers have been made to the lochs in west Sutherland which were treated in 1944 and 1955, but observations on these lochs have been fully maintained. The most interesting results obtained during the year are evidence of a substantial increase in the bottom fauna of the two lochs in which quantitative observations are being made. There are also indications of favourable effects on the growth-rate of the trout, but these require confirmation. Observations on these lochs will be continued for some time.

Observations have been maintained on the phytoplankton of Loch Kinardochy, to which calcium superphosphate was added in 1952. These have shown that the phytoplankton population of this loch, which showed considerable increases for some 1—2 years after treatment, has now returned to more normal densities and now exhibit a fairly regular and apparently normal pattern of periodicity.

Work has been continued on the homing behaviour of trout in the stream entering Dunalastair Reservoir, including observations on the behaviour of fish transferred from one spawning stream to another under a variety of conditions. Observations, which have now been in progress for some time, on the migrations of immature trout have shown similarities with those of young salmon and it is clear that a small proportion of young male trout became, like salmon parr, mature precociously and pair, or attempt to pair, with adult females.

An experiment to assess the effects of an increased rate of cropping on a trout population has been begun on a loch near Pitlochry which is little fished and which is reputed to contain many small trout. After the population had been estimated, some 22 % of the trout were removed by gill-netting. These opera-

tions provided an opportunity of testing the relative efficiencies of cotton, linen and nylon twine gill nets. The last named were found to be the most efficient.

Observations have been continued on the trout of Loch Garry (Inverness-shire). Earthworms formed the bulk of the food of these fish until May but from then onwards most of the food was aquatic in origin. All groups of trout in this loch showed a considerable increase in growth-rate during 1956. Laboratory experiments are in progress on the relationship between food requirements and the growth of various types of trout during the winter months.

Work on seasonal variations in the emergency of aquatic insects has been continued and, though the detailed results for 1956 have not yet been fully analysed, it seems likely that they will prove to be of interest when compared with those for 1955, because weather conditions during these two years were different in several ways.

Field observations on the addition of mineral fertilizers have been supplemented by observations made in concrete ponds within the grounds of the Pitlochry laboratory. Water in these ponds was treated with phosphate or a phosphate-nitrate mixture and the effect of these additions on the algal flora has been studied. The results have not yet been fully analysed, but it is clear that the situation is complex and that the effect of the introduction of extraneous matter from near-by trees has complicated the situation further. The investigation of the phosphate relationships of certain aquatic macrophytes has also been continued. This is proving to be anything but a straightforward problem as there are marked differences in the phosphorus content of different parts of the same plant and also between plants from the same sampling site.

U. S. S. R.

(G. Nikolsky).

In 1956 approximately ten thousand centners of Atlantic salmon have been caught in the northern waters of the USSR. Almost 7,000 centners belong to the Arkhangelsk district. From this catch 60 % were caught in the Petchora river. (In 1956 the catch in Petchora was 4,900 cwt.).

There are 18 salmon hatcheries in the USSR for artificial propagation of Atlantic salmon. Five of these hatcheries take the incubation of the eggs in natural water bodies in Shukowsky apparatus system. In other fish hatcheries the incubation of egg takes place in the Atkins or Williamson apparatus or in troughs. The production of fish hatcheries in 1956 was 37·4 mill. of larvae and 1·1 mill. parr.

In 1957—59 two new salmon hatcheries will be built and many old hatcheries reconstructed. The reconstruction is aimed at an increase of incubation of eggs in hatcheries and the prolongation of the rearing of fingerlings to the smolt stage. The food for young fishes in artificial conditions are meat, fish eggs (cod, herring, lump sucker), oligochaets, nematods, bloodworms, and *Daphnia*.

The investigations of the Atlantic salmon in the USSR in 1956 were carried out by the following research organizations: Institute of Freshwater Fisheries in Leningrad, Polar Institute of Marine Fisheries and Oceanography in Murmansk, Department of Ichtyology and Hydrobiology of the University of Leningrad, the Karelian Branch of the Academy of Sciences of the USSR in Petrosavodsk, and the Petchora State Preserve in Yaksha.

The Institute of Freshwater Fisheries carried out the following salmon investigations:—

1. Studies of the natural spawning conditions in northern rivers.
2. Survival of the young fishes in the river period.
3. Improvement of the methods of artificial rearing of young salmon at fish hatcheries.

The investigations were carried out under the leadership of Professor Ivlev.

The work of the Polar Institute of Marine Fisheries and Oceanography took place along the following main lines:—

1. Determination of the percentage of total population of fish caught.
2. Determination of the percentage return from the young fishes which descended to the sea.
3. Determination of the total survival.
4. Determination of the percentage of fishes with two spawning migrations.

These investigations were carried out under the leadership of the Director of the Institute I. Lagunov and Candidate of Sciences Asbelev.

The work of the Dept. of Ichthyology and Hydrobiology of the University of Leningrad was connected with the studies of the conditions of the appearance of the sea-running stages of the Baltic salmon and with the problems of artificial hatching of salmon (in 1957 the investigations will be carried out at the new Narva fish hatchery). These investigations were made under the leadership of Professor Gerbilsky.

The staff of the Karelian Branch of the Academy of Sciences studied in 1956 the biology of the Ladoga salmon. In 1957 these investigations will be enlarged.

In the Petchora Reservation the observation of the conditions of spawning on the upper Petchora spawning grounds took place. Also work connected with the preparation of the paper on the ecology of spawning of the Petchora salmon (Mrs. Vladimirskaja) was carried on.

In 1957 the investigations of all scientific organizations mentioned above will take place in the same main directions.

Publications

Campbell, R. M., 1955. "Food and feeding habits of brown trout, perch and other fish in Lough Tummel." Scot. Nat., **67**: 23—28.
Fontaine, M., 1956. "Analyse expérimentale de l'instinct migrateur des poissons," pp. 151—175, dans "l'Instinct dans le Comportement des Animaux et de l'Homme". 1 Vol. Masson. Edit.
— 1956 (en collaboration avec Arvy, L., & Gabe, L.). "Modification de la voie neuro sécrétrice hypophysaire de *Salmo salar* L. au cours du cycle évolutif." C.R. Ass. Anatom., **42**: 224—33.
— & Fontaine, Y. A., 1956. "Détermination du pouvoir thyréotrope de l'hypophyse et du milieu intérieur des téléostéens par mesure de la fixation de 131 I par la thyroïde de la truite arc en ciel (*Salmo gairdneri* L.)". J. Physiol., **5**.
McGrath, C., 1956. "Inland fisheries and the engineer." Trans. Inst. Civil Eng. Ireland, **82**: 51—99.
Munro, W. R., & Balmain, K. H., 1956. "Observations on the spawning runs of brown trout in the South Queich, Loch Leven." Sci. Invest. Freshw. Fish. Scot., **13**.
Shearer, W. M., 1955. "Salmon scale absorption." Scot. Nat., **67**: 107—08.
Shearer, W. M., 1955. "Fish remains in the stomach of Atlantic salmon." Ibid., **67**: 108—09.
Stuart, T. A., 1956. "The selection of spawning sites by trout." Proc. Linn. Soc. Lond., **167**: 74—76.
Twomey, E., 1956. "Trout of Caragh Lake, Co. Kerry, Ireland." Salmon and Trout Mag., **147**: 112—19.
Vibert, R., 1956. "Méthode pour l'étude et l'amélioration de la survie des alevins de repeuplement (Truites et Saumons)." Ann. Stat. Cent. Hydrobiol. Appl., **6**: 347—439.
— "Mortalités dues aux invertébrés prédateurs sur les oeufs de Truites et de Saumons." Bull. C.E.R.S. Biarritz, **1** (1): 21—32.
Went, Arthur, E. J., 1956. "The Irish drift net fishery for salmon." J. Dept. Agric. Dublin, **52**: 131—45.
— 1956. "Sea trout of the Cashla River, with notes on the salmon." Salmon and Trout Mag., **146**: 63—76.
— 1956. "Salmon of the River Foyle (1954). Appendix IV. Fourth Report." Foyle Fisheries Com.
— & Vickers, K. U., 1956. "Salmon movements around Ireland. VI. From Portballintrae, Co. Antrim." Proc. Roy. Irish Acad., **58**, B (2).
— — 1956. "Tagging programme 1955. Appendix III. Fourth Report." Foyle Fisheries Com.

Shellfish Committee

1956

By H. A. Cole

CRUSTACEA

Belgium

(E. Leloup).

Crangon vulgaris. The biological study of the shrimp was continued. Its aim is to ascertain the annual evolution of the stock of shrimps on the Belgian coast. The following observations were made:

(a) Determination of all organisms caught with the shrimp trawl.
(b) Determination of the total quantity of shrimps caught.
(c) Recording the length distribution of a 1 kg. sample of raw shrimps, also the weight of each size-group.
(d) Determination of the commercial and non-commercial quantities of shrimps caught.
(e) Recording the length distribution of a 1 kg. sample of commercial shrimps, also the weight of each size-group.
(f) Recording the number of shrimps with or without eggs per size-group.

Denmark

(E. Ursin).

Research was continued on *Pandalus borealis*, *Leander adspersus*, and *Nephrops norvegicus* in Danish waters and on *Pandalus borealis* in Greenland waters.

England and Wales

(H. A. Cole).

Homarus vulgaris. Studies of the Welsh coast fishery have been completed. Lobsters were marked and liberated to give information, by recapture, on the rate of exploitation of the stock, growth-rate, and migrations.

Comparative fishing trials were made with various types of lobster pot. Some provisional bait trials have been made in tanks at Conway.

Investigation has begun of the South Cornwall fishery and marked lobsters have been liberated.

Pandalus montagui. Production of pink shrimps in the Thames estuary is still under investigation. Comparative fishing trials with nets of various mesh

sizes between 16 and 24 mm. (inside the knots) have been completed. In Morecambe Bay the total disappearance of the pink-shrimp fishery, previously erratic, has been studied.

France

(Institut des Pêches).

Homarus vulgaris. Un cantonnement interdit à la pêche pour plusieurs années a été créé près de l'île de Molène, à la côte de Bretagne, avec le concours des pêcheurs. Des femelles œuvées y ont été rejetées en mai et juin après avoir été marquées, mesurées et pesées. On signale près de 10 % de reprises en 12 mois.

Nephrops norvegicus. 11,000 langoustines pêchées en avril et en août près du banc Labadie ont été mesurées; des observations ont été faites sur la croissance, la taille suivant le sexe et la maturité sexuelle.

Germany

(P. F. Meyer-Waarden).

Crangon vulgaris. The composition of the shrimp catches and their content of undersized food fishes were continuously controlled, as in the previous years. 802 samples of the catches from the fishing areas from Wyk on Föhr to Norddeich revealed that the amount of undersized food fishes, converted to the average per annum, admitted by the rules of the North Sea Convention, was far below that quota. The number of undersized plaice and dab taken in these catches was approximately the same as in 1955. The proportion of lemon soles, however, declined remarkably. The growth of young plaice, dab, and soles was observed together with the seasonal changes of the shrimp population by taking samples from the catches.

Ireland

(F. A. Gibson).

Leander serratus. Experimental fishing for prawns was continued at two further places off the Waterford and Galway coast.

Cancer pagurus. As a result of experimental work on the south-west coast in 1955, a fishery for the edible crab at Schull, Co. Cork, was developed in 1956.

Nephrops norvegicus. Norway lobsters were fished experimentally in Bantry Bay and off Helvick Head using a small whiting trawl.

Scotland

(H. J. Thomas).

Homarus vulgaris. A pamphlet on lobster storage has been prepared and is shortly to be published.

One thousand marked lobsters, coded according to carrapace length, were liberated off the south-east Scottish coast during May 1956. Of the returns, 97 had cast since liberation. The growth of newly matured female lobsters at casting appears to be less than that of males of corresponding length.

An experiment has been conducted on the effect of size of creel eye on the catch of lobsters and crabs, and a paper on this subject has been prepared for publication.

Sampling of lobsters for *Nicothoë astaci* has been continued from a number of stations around the Scottish coast at all seasons.

Nephrops norvegicus. A regular monthly sampling of the stocks of this shellfish in the Firth of Forth has been undertaken.

Sweden

(H. Höglund).

Homarus vulgaris. The marking experiments have continued along the same line as in 1955. In the middle of June, 682 berried females were marked by means of punch holes in the tail fins and released in the northern part of Bohuslän. In late autumn, 202 marked lobsters were liberated in the middle part of Bohuslän.

Nephrops norvegicus. Samples from trawl catches in the Skagerak have been examined with regard to length and sex.

MOLLUSCA

Belgium

(E. Leloup).

Oysters

(a) A study on the rate of growth of the oysters cultivated in the sluice-dock (Bassin de Chasse) at the port of Ostend.

(b) Collaboration towards the establishment of a method of sanitary control of shellfish.

Mussels. As during previous years, investigations were carried out during May and September on the mussels living on the coastal defences along the Belgian coast from Knocke to La Panne in order to ascertain the degree of infection of the mussels by the copepod *Mytilicola intestinalis*.

Denmark

(E. Ursin).

Investigations have been made of the growth-rate and local variation of *Cardium edule* and *Mya arenaria* in inner Danish waters.

England and Wales

(H. A. Cole).

Oysters. Study of the production and settlement of oysters in Essex has continued. Among enemies of the oyster, *Urosalpinx cinerea*, *Asterias rubens*, and *Polydora ciliata* have received attention.

At Conway the breeding of oysters in tanks has continued by the technique used successfully in earlier years. The small scale laboratory rearing experiments have been successfully expanded to volumes of 45 litres. The adult breeding oysters were fed on *Phaeodactylum* and the larvae on *Isochrysis galbana*. Special attention was given to the control of the adverse effects produced by bacteria in the cultures.

Mussels. A survey from Yarmouth to the Wash revealed no extension in the range of *Mytilicola*.

Studies of the growth-rate of stocks of mussels in various situations in the Conway estuary have been completed.

The feeding of oystercatchers (*Haematopus*) on mussels has been investigated.

Cockles. Surveys of stocks of cockles on the Welsh coast have been continued with improved techniques.

Escallops. The densities of escallops in the English Channel, off Newhaven, were reassessed. Further comparative trials were made with the new sledge dredge and one of the traditional type.

Underwater observations have continued of dredges in action and the behaviour of escallops on the sea bed has been observed.

Whelks. Anxiety regarding the stocks of whelks being fished from Whitstable and Wells has led to investigations of breeding and growth. Fishing methods and the efficiency of pots and bait are being examined.

Sanitary Control. Further comparisons have been made of the British and French methods for the bacteriological examination of shellfish.

Sterilization by ultra-violet light has been employed in the cleansing of polluted shellfish, and a simple type of purification plant has been constructed. Techniques of mussel and oyster purification have been further simplified and cheapened.

France

(Institut des Pêches).

Ostréiculture. L'hydrologie des diverses régions ostréicoles a fait l'objet d'observations méthodiques; l'étude des courants superficiels des rivières de Bretagne, de Charente et de Gironde, à l'aide de flotteurs a été menée simultanément afin de préciser leur influence sur la dispersion des larves.

Les prévisions à long terme de la date de la première émission des larves d'huîtres, établies en fonction des températures des premiers mois de l'année, se sont révélées une nouvelle fois exactes. L'apparition des embryons et leur évolution jusqu'aux stades de fixation ont été étudiées par l'examen de 1,105 échantillons de plancton recueillis à intervalles réguliers. En 1955 et 1956 les fixations de *Gryphaea angulata* Lmk. ont eu lieu entre la mi-juillet et la mi-septembre, sur toute la côte atlantique, de la Bretagne à Arcachon.

La recherche de nouveaux centres de captage de l'huître plate a été entreprise en Bretagne, notamment dans la rade de Lorient, le bassin morbihannais ne parvenant plus à satisfaire les besoins d'une industrie toujours en expansion.

Les collecteurs en cellulose moulée sont de plus en plus utilisés pour le captage de l'huître portugaise dans la vallée de la Seudre où l'emploi d'un fil d'acier inoxydable a été par ailleurs répandu.

La reconstitution, l'extension et l'entretien des gisements d'*Ostrea edulis* (L.) ont été poursuivis en Bretagne. En Gironde, l'influence de la pêche sur la productivité des bancs de gryphées a été étudiée au cours de le campagne 1956.

Les études sur l'action des éléments fertilisants apportés au sol des claires ou des parcs ont été continuées; les variations physiologiques du phosphore total de la coquille de la gryphée ont été précisées.

Des recherches diverses ont été effectuées sur l'alimentation des huîtres, sur le volume de l'eau intervalvaire, sur la résistance aux variations de salinité et de température, sur l'influence des radiations ultra-violettes dans le comportement des larves, sur la qualité et l'évolution du sol des claires.

Moules et autres coquillages. La recherche des larves de moules a été poursuivie en Charente.

L'intensité de l'envasement provoqué par les bouchots a été étudiée à l'embouchure de la Loire.

Les observations sur la biologie de *Pecten maximus* (L.) ont été continuées en rade de Brest.

Les gisements de *Chlamys varia* L. des côtes de Charente et du bassin d'Arcachon sont actuellement très appauvris.

Contrôle sanitaire. Des essais ont été poursuivis afin de comparer et de mettre au point des méthodes bactériologiques permettant de déceler et de mesurer les contaminations éventuelles. Les dernières études ont porté notamment sur l'identification de *E. coli* type fécal et sur la recherche des entérocoques.

Netherlands

(P. Korringa).

Oysters. Spatfall forecast based on plankton observations has been carried out throughout the summer season. Exceptionally low water temperatures counteracted larval development. Unprecedentedly late, in the last few days of July, could improvement be announced. Though of short duration, this spell of good setting conditions was used by the majority of oystermen, so that most tiles collected a commercial crop of spat. The majority of the mussel shells scattered as collectors did not balance the expense.

The horizontal and vertical distribution of oyster larvae has been a subject of observation. It was the site in the Zandkreek, where the majority of tiles are planted, which had our special attention, because the danger threatens that through engineering works currents will be changed considerably.

The condition of the oysters was followed in several stations throughout the year. At the end of the fattening season samples of oysters were collected

from a great number of plots in the Zeeland waters, and their condition analysed.

Observations on the occurrence of shell disease were carried out in the summer season. New infection with shell disease was completely absent.

Water samples were analysed weekly to continue the study on fertility and production biology in the Oosterschelde.

In the Wemeldinge field laboratory the efforts to rear oyster larvae under control were continued.

Mussels. Throughout the summer and autumn mussel samples from four stations in the Waddensea were analysed for growth and condition index. Late in the year samples of mussels were collected from a great number of plots in the Waddensea to study the pattern of fattening there. A film was made on the Dutch mussel industry, which will be ready in the course of the year 1957.

Norway

(A. Dannevig).

Oysters. The conditions for the oyster were good in the natural ponds. The occurrence of the spat in the natural ponds was poor.

In the rearing at Flødevigen a good number of spat was collected.

Scotland

(R. H. Millar).

Oysters. Work was continued at West Loch Tarbert, Argyll, on a programme to discover whether this area is suitable for the establishment of a commercial oyster fishery. As no native stock of oysters remains, imported French oysters were laid in 1955 and 1956 to act as breeding stock. A survey of the loch was continued, and the bottom deposits and fauna were sampled and analysed. Water temperature and salinity were recorded, and also meteorological conditions. The growth-rates of oysters were measured at different places, in an attempt to relate them to local physical and biological conditions.

Breeding was followed by taking quantitative plankton samples and counting and measuring the oyster larvae. Flagellates available as food for the larvae were also counted. The dispersal of the oyster larvae was followed by liberating large numbers of larvae stained with neutral red and identifying them in subsequent plankton samples.

The survey of other areas on the Scottish west coast was extended, and small experimental layings of French oysters made. The mortality, growth, and fattening of these oysters in the following few years will determine the suitability of the areas tested.

Laboratory experiments have also been made on the artificial production and rearing of oyster larvae throughout the year.

Germany

(P. F. Meyer-Waarden).

Oysters. Experiments to replant the Portuguese oyster were carried out. In the Waddensea off the East Friesian coast the mussels of about 35—37 g. had increased their weight after five months to 43 g. on the average, i. e., by nearly 20 %. The actual flesh-portion had grown during that period from 3—4 g. to 9 g. on the average and had thus increased its weight nearly three times. The weight of the shells, however, had increased only from 24—27 g. to 31 g., i. e., by about 23 %.

Mussels. The infection of *Mytilus edulis* by *Mytilicola intestinalis* was investigated by taking numerous samples for control. In January more than 95 % of the mussels were attacked by about 8·6 parasites on the average; at the beginning of September, however, only 40 to 60 % of the stock were infected by 1—1·8 parasites each. A considerable drop in that condition occurred already at the beginning of October, and by the end of the month the condition observed at the beginning of the year was again prevailing. About 60 % of the parasites observed by the middle of October were adult, and so were more than 80 % in November.

The mussels off the coast of Schleswig-Holstein remained uninfected by the parasite. The quality of the mussels was fairly good with weak to medium infection, and the proportion of meat exceeded often $^1/_3$ of the total weight and always more than 30 %.

Publications 1956

Baird, R. H., & Gibson, F. A.: "Underwater observations on escallop (*Pecten maximus* L.) beds." J. Mar. Biol. Assoc. U.K., **35** (3): 555—62.

Cole, H. A.: "Benthos and shellfish of commerce" (in Sea Fisheries, pp. 139—206, edited by Michael Graham). Arnold, London.

— "Oyster cultivation in Britain." 42 pp. H.M.S.O.

Cole, H. A., & Waugh, G. D.: "Shell disease in Portuguese oysters." Nature, **178** (4530): 422.

Deschamps, P.: "Contribution à l'étude des xylophages marins." Rev. Trav. Inst. Pêches Mar., **20** (2).

Drinnan, R. E.: "An investigation into the feeding habits of the oyster-catcher." Merseyside Nat. Assoc. 1954—55.

Faure, L.: "La coquille Saint-Jacques (*Pecten maximus* L.) de la rade de Brest." Rev. Trav. Inst. Pêches Mar., **20** (2).

Gibson, F. A.: "Escallops (*Pecten maximus* L.) in Irish waters." Proc. R. Dublin Soc., N.S., **27** (8).

Hancock, D. A., Drinnan, R. E., & Harris, W. N.: "Notes on the biology of *Sertularia argentea* L." J. Mar. Biol. Assoc. U.K., **35** (2): 307—26.

Hepper, B. T.: "The European flat oyster *Ostrea edulis* L. as a host for *Mytilicola intestinalis* Steuer." J. Anim. Ecol., **25** (1): 144—47.

Korringa, P.: "Oyster culture in South Africa. Hydrographical, biological and ostreological observations in

the Knysna Lagoon, with notes on conditions in other South African waters." Div. Fish. Invest. Rep., 20. 86 pp. Commerce & Industry, March.

Le Dantec, J.: "Observations sur un essai d'élevage d'huîtres portugaises en caisses ostréophiles." Rev. Trav. Inst. Pêches Mar., **20** (2).

Letaconnoux, R.: "Compte rendu d'essais pour la protection des bois contre les tarets." Ibid., **20** (2).

Letaconnoux, R., & Audouin, J.: "Contributions à l'étude du pétoncle (*Chlamys varia* L.)" Rev. Trav. Inst. Pêches Mar., **20** (2).

Marteil, L.: "Acclimatation de *Venus mercenaria* L. en Bretagne." Rev. Trav. Inst. Pêches Mar., **20** (2).

Reynolds, N.: "A simplified system of mussel purification". Fish. Invest., Ser. 2, **20** (8): 18.

Reynolds, N., & Wood, P. C.: "Improved techniques for bacteriological examination of molluscan shellfish." J. Appl. Bact., **19** (1): 20—25.

Savage, R. E.: "The great spatfall of mussels (*Mytilus edulis* L.) in the river Conway Estuary in spring 1940." Fish. Invest., Ser. 2, **20** (7): 22.

Trochon, P., & Baron, G.: "Un nouveau type de collecteur à huîtres." Rev. Trav. Inst. Pêches Mar., **20** (3).

Walne, P. R.: "Bacteria in experiments on rearing oyster larvae." Nature, **178** (4524): 1091.

— "Experimental rearing of the larvae of *Ostrea edulis* in the laboratory." Fish. Invest., Ser. 2, **20** (9): 23.

— "The biology and distribution of the slipper limpet *Crepidula fornicata* in Essex Rivers." Ibid., **20** (6): 50.

Wood, P. C.: "The enumeration of *Escherichia coli* in seawater. A comparison of counts determined by the 'Most Probable Number' method in liquid medium with direct counts by the Roll-Bottle method." J. Appl. Bact., **19** (1): 26—30.

Hydrographical Committee

1956

By G. Böhnecke

Belgium

(E. Leloup).

"West-Hinder" Lightship

(a) A water sample was collected every three days for the determination of surface temperature, Cl, salinity, and alkalinity.

(b) Once a week, a water sample was collected for complete chemical analysis—Cl, salinity, alkalinity, sulphates, calcium, and magnesium.

(c) Continuous current observations were made with the Carruthers Vertical Log Current-Meter.

Fishery Research Vessel "Hinders"

(a) The following observations were made on the line Gravelines—Deal (Stations B 13, 14, 15, and 16) and off the Belgian coast (Station B 22, off Nieuport).

Once a month from January to October:

1) water samples were collected at the surface (1 m.), at the bottom, and at 20 and 40 m., where the depth sufficed (temperature, Cl, salinity, and alkalinity);

2) a water sample was collected at 20 m. at each station for complete chemical analysis (Cl, salinity, alkalinity, sulphates, calcium, and magnesium).

(b) Whenever the "Hinders" was at sea for experimental fishing surface water samples were taken at various positions off the Belgian coast.

The results of the analysis of the water samples were communicated, as regularly as possible, to Mr. Jens Smed, Hydrographer of ICES at Copenhagen, for the monthly charts of surface temperature and salinity, wind and current of the North Sea and English Channel, and also for publication in the *Bulletin Hydrographique.*

Denmark

(Helge Thomsen).

Cruises. Observations of t° and S $^0/_{00}$, occasionally P and O_2 were made with the "Biologen" in the Skagerak, the Kattegat, and the Belts at various periods from April to December. Observations of t, S, O_2 and P were made in the Baltic near Bornholm at the end of August.

In the North Sea extensive t and S surveys were carried out with the M/C "Sujumut" (17. April to 27. June), the M/C "Jens Væver" (23. June to 26. July), and the "Dana" (21. August to 26. September).

The Shetland-Faroe section was run by the "Dana" on 19. and 20. June, and the section along 62° N. from the Faroes to Greenland was run between 28. June and 7. July. In July the "Dana" worked in the Davis Strait and completed the routine sections off Frederikshåb, Godthåb, Sukkertoppen, Holsteinsborg, and Egedesminde.

A section off Cape Farewell was run at the end of July, and the section from Cape Farewell to Ireland

from 1. to 10. August. The "Dana's" observations comprised t and S, and occasionally O_2 and P also.

The cutters "Adolf Jensen" and "Immanuel" worked throughout the year in the coastal waters off West Greenland. Observations of t and S were made, approximately once a month at fixed stations near Godthåb and Julianehåb.

Observations from Liners. Surface samples were collected from liners on the routes Skagen—Greenland and Esbjerg—Grimsby/London.

Observations from Lightvessels and Coastal Stations. Regular hydrographic observations have been made by the Danish Meteorological Institute as follows:—

1. Daily observations of t and S at 12 lightvessels and 19 coastal stations.
2. 4-hourly estimations of the surface current at 12 lightvessels.

England

(J. R. Lumby).

Fisheries Laboratory, Lowestoft

In the Barents Sea, the following sections were worked (the figures in brackets indicate the months):

West Bear Island (4, 9, 12); East Bear Island (4, 9, 12); Fugløy—Bear Island (3, 9, 12); Malangen (3, 9); Vardø—Goose Bank (12); Central Bank—Goose Bank (12); North Cape (4).

Observations for the study of the relationship between water temperature and cod distribution were made throughout the year. Experimental work was done on the measurement of currents by towed electrodes, on the measurement of turbidity, and on the recording of surface and subsurface temperature, depth, and pH.

In the North Sea, temperature and salinity surveys were made in January and February in the Southern Bight, in connexion with plaice investigations. The phosphate content of the bottom deposits and the overlying water on the Dogger Bank and at Smith's Knoll was determined in April. Temperature and salinity surveys were made in connexion with plankton studies between the Humber and Longstone in June and on the East Anglian herring grounds in October.

The routine observations of the temperature and salinity of the surface waters round the British Isles from commercial vessels, lightships, and Ocean Weather Ships were continued.

National Institute of Oceanography, Wormley

Basic studies have been continued on the interchange of energy between the oceans and atmosphere, the action of wind on the sea, and the circulation of water in the oceans.

Papers have been published on turbulence in the atmosphere and the ocean, on the statistics and aerodynamics of the sea surface, on waves and ship movement, on the generation and propagation of long waves, and on the measurement of surface and deep-water movements. Some of the measurements near the bottom have been made on the Wyville-Thomson Ridge in collaboration with the Marine Laboratory, Aberdeen, and on the Sogne Fjord section in collaboration with the Geophysical Institute, Bergen.

Oceanography Department, University of Liverpool

The regular observations of surface temperature and salinity at 9 stations in the Irish Sea were continued, three times weekly, throughout the year.

Further work on the geochemistry of certain trace elements has been in progress; the concentrations of gallium and germanium in sea water and marine sediments have been investigated. Studies have been carried out on the major and minor elements of red clays and manganese nodules.

New procedures have been devised for the determination of phosphate and amino-nitrogen in sea water.

Variations of the flow through the North Channel, as shown by voltages on the telephone cable from Portpatrick to Donaghadee, were recorded throughout the year. For some periods records were also obtained from a cable crossing the Holyhead-Dublin channel from Nevin to Howth.

Measurements of tidal currents at various depths were carried out in the North Channel in July from the "William Herdman". Three hydrographic sections across the channel were worked during this period.

A survey was made, in May, of the salinity in the Narrows of the Mersey estuary, and its variation during the tidal cycle.

Marine Biological Association, Plymouth

The monthly programme of work at International Hydrographic Station E 1 has been continued. Measurements have been made of temperature, salinity, phosphate, silicate, iron, and, on some occasions, total phosphorus.

Two cruises have been made to the deep water beyond La Chapelle Bank and to what has now become a standard station in the Bay of Biscay at 46°30′ N., 8°00′ W. Repetitive measurements were made for temperature, salinity, oxygen, and silicate. Additional samples were taken for analysis of phosphate, vitamin B_{12}, and gold. This work showed that the oxygen distribution of the deep water in the Bay is heterogeneous.

Finland

(Ilmo Hela).

Cruises. A cruise in the Baltic Sea was made with the research vessel "Aranda" from 4. June to 17. September. During this cruise the salinity, temperature, and pH were measured at all standard depths at

120 stations. At every station the vertical distribution of temperature was also recorded with a 60-metre bathythermograph. At certain stations oxygen, alkalinity, inorganic phosphorus, silicate, nitrate, nitrite, and "yellow substance" were also determined. Vertical plankton hauls were taken in connexion with special studies of the Bothnian Sea (50 samples) and the Åland Sea (60 samples). Double samples of bottom fauna were taken at 100 stations, and 18 pelagic trawl hauls were made north and south of the Åland Isles. By means of the Kullenberg piston-corer 52 samples were taken in the northern part of the Baltic proper and in the Gulf of Bothnia, while 11 samples were taken in the southern Baltic, the maximum length obtained being 10 metres. 170 gravimetric measurements were made with a maximum depth of 155 metres.

Observations from Liners. Surface temperature and salinity observations were made on board one liner on the Helsinki—Copenhagen (Antwerp) route.

Observations from Coastal Stations and Lightships. Hydrographic observations were made at 25 fixed stations (temperature and salinity), of which 4 were established mainly for studying the migration of the Baltic herring, and at 6 lightships (temperature, salinity, wind, and current). Sea-level records were collected at 13 tide-gauge stations and at 12 tide-pole stations. Ice observations were carried out at 77 ice stations, on 5 ice breakers, on aeroplanes, and on board the Finnish winter liners. Ice samples were taken at 6 stations.

France

(Institut des Pêches).

Le "Président-Théodore-Tissier" au cours de sa première campagne en avril a fait des prises de températures et des prélèvements d'eau à diverses profondeurs du Canal de Bristol au nord, à la Grande Sole à l'ouest et à Belle-Ile au sud.

La seconde campagne, en mai et juin, s'est effectuée dans le Golfe de Gascogne jusqu'aux Açores et au large de la Péninsule Ibérique; au cours de la section hydrologique de Brest aux Açores, depuis la surface jusqu'à 2000 m. de fond, les opérations suivantes ont été faites à bord: prises de températures, déterminations de salinités, de la teneur en oxygène dissous, en phosphates, en silicates et de la teneur en chlorophylle à la profondeur de 10 mètres.

Une carte hydrographique du banc "Princesse Alice" au sud des Açores est en préparation; le "Tissier" a chaluté par 400 m. sur ce haut-fond.

La troisième partie a eu lieu en août en Mer d'Irlande et en Mer Celtique; elle a comporté des prélèvements de températures et d'échantillons d'eau; des carottages jusqu'à 1000 mètres, avec carottes de 10 mètres (carottier Kullenberg); des sondages hydrographiques autour du haut-fond du "Président-Théodore-Tissier" (au sondeur Kelvin-Hughes).

Sur un total de 414 stations, 1600 températures ont été relevées, 4000 analyses ont été effectuées, ainsi qu'une centaine de dragages et 15 carottages.

Plus à terre, trois bateaux-pilotes-de-pêche, en détectant la sardine, ont fait des prises de températures de mai à novembre, depuis les côtes de Bretagne jusqu'à la frontière espagnole.

D'autre part, les bâtiments de la Marine Nationale ont effectué des travaux océanographiques dans les régions suivantes:—

1. Manche, Mer du Nord, côtes de Norvège, Mer de Barents, Féroés, Islande ("Ailette").
2. Ouvert de la Manche (campagnes trimestrielles des escorteurs de la 2ème région maritime).

Ces observations ont consisté en mesures de la température et déterminations de la salinité en surface.

Les frégates météorologiques françaises "Mermoz" et "Le Verrier" ont fait 900 prélèvements d'eau en surface avec relevés des températures aux points "Alfa" (62°00′ N., 33°00′ W.), "Juliette" (52°30′ N., 20°00′ W.), "Kilo" (45°00′ N., 16°00′ W.) et sur les trajets aller et retour.

Germany

(G. Böhnecke).

Biologische Anstalt Helgoland

Coastal Station. Regular observations of surface temperature (daily) and salinity (at intervals of 14 days) were carried out near List, Isle of Sylt.

The temperature, salinity, dissolved oxygen, and pH at the surface in the List harbour were determined at intervals of 10 days, in connexion with a study of boring organisms.

Cruises. A cruise in the southern North Sea was made with the fishery research ship "Anton Dohrn" from 26. June to 6. July for investigations on the biology of flatfish and mackerel, and the distribution of the fry of summer-spawning fish. During this cruise, observations of temperature, salinity, and organic matter were made on 3 sections.

Deutsches Hydrographisches Institut

Lightships. The positions and the programme of regular observations at the eight lightships—three in the western Baltic and five in the German Bight—remain unchanged since last year. The observations made in 1955 were published as a year book ("Beobachtungen auf den deutschen Feuerschiffen der Nord- und Ostsee", in the "Meereskundliche Beobachtungen und Ergebnisse" No. 8. Deutsches Hydrographisches Institut, 1956). The current measurements at the "Borkumriff" lightship and the surface hydrographic observations at the five German lightships in the North Sea in 1956, were sent regularly to the Service Hydrographique for use in the Synoptic Hydrographic Charts.

Liners. Surface samples were collected six times a month from liners on the Hamburg—Hull route.

Cruises. In 1956 two cruises were undertaken for oceanographic work with the survey and research ship "Gauss".

1. In June/July in the North Friesian waters. Tidal and residual currents were measured synoptically with 20 paddle-wheel current-meters.
2. In August/September on the Greenland—Iceland Ridge. A close network of surface observations was taken in the course of the survey of the ridge and used for studying the oceanic polar front; see: G. Dietrich, "Trend of the oceanic polar front on the Greenland—Iceland Ridge in August 1956". Ann. Biol., **13**.

Deutsche Wissenschaftliche Kommission für Meeresforschung

In 1956 hydrographic investigations were carried out on ten cruises undertaken with the "Anton Dohrn":—

(a) In January in southern Icelandic waters. The overflow across the Iceland—Faroe Ridge was investigated at 44 stations. The results have been reported by G. Dietrich: "Überströmung des Island—Färöer Rückens in Bodennähe nach Beobachtungen mit dem Forschungsschiff "Anton Dohrn" 1955/56". Dtsch. Hydrogr. Zeitschr. **9**, 1956.

(b) In February in the northern North Sea between the Shetlands and Norway. The layering was investigated on 96 stations. The results have been given by W. Krauss: "Hydrographic conditions in the northern North Sea and in the Norwegian Channel, February 1956." Ann. Biol., **13**.

(c) In April in the German Bight. The distribution of water masses of different origin was determined by means of observations at 62 stations.

(d) In May in the southern Icelandic waters. To supplement the cruise in January 1956, the overflow across the Iceland—Faroe Ridge was studied on two sections on which 34 stations were worked. The results are summarized in the report by G. Dietrich, quoted under (a).

(e) In June in the northern North Sea. The development of the discontinuity layer in summer was observed at 20 stations. The results are given by G. Prahm: "Summer bottom temperature in two selected areas of the central North Sea in the years 1900—1956." Ann. Biol., **13**.

(f) In July in the German Bight. The distribution of water masses of different origin was determined from observations at 47 stations.

(g) In August in the northern North Sea. Further observations were made on the summer thermocline, and the results are given by G. Prahm in the paper quoted under (e).

(h) In September in the central North Sea. Observations at 85 stations, including BT measurements, in the Dogger Bank region were reported on by G. Dietrich: "Hydrographic conditions in the Dogger Bank region in September 1956." Ann. Biol., **13**.

(i) In October in the southern North Sea. Observations were made of the last stage of the summer layering at 22 stations.

(k) In November/December in northern Norwegian waters. A section north-west of Malangen was repeated four times to study the influence of internal waves on layering. The results are given by W. Krauss: "Fluctuations of the hydrographic conditions in a section across the Norwegian Current." Ann. Biol., **13**.

Institut für Meereskunde der Universität Kiel

Serial observations of temperature and salinity were made during the cruises of the R/V "Südfall" in Kiel Bay, Great Belt, and Little Belt in June (14.—15.) and July (3.—5.) in connexion with a mackerel spawning survey.

In August (4.—11.), on the return voyage from Helsinki to Kiel with R/V "Südfall", a longitudinal section was carried out through the deepest trough in the Baltic. Serial observations were made at 27 stations of temperature, salinity, oxygen, and nutrient salts. The thermal micro-stratification was investigated by means of an electrical thermometer (Hinkelmann, H.: "Ein Gerät zur Schnellregistrierung des Druckes, der Temperatur und des Salzgehaltes für Anwendungen in der Ozeanographie." Kieler Meeresforsch., **12**).

Long-term hydrographical investigations were continued with observations at monthly intervals at 3 stations in the Kieler Förde and daily surface water samples in Kiel harbour.

Iceland

(U. Stefánsson).

Cruises. In connexion with the herring investigations, hydrographical and chemical surveys were made from 19. May to 27. June in the waters off the west, north, and east coasts of Iceland. A number of BT stations were worked in the area north of the Faroes.

In August hydrographical and chemical investigations were repeated on three sections north-west, north, and north-east of Iceland.

Throughout July and August a large number of BT observations were made on the herring grounds off the north and east coasts of Iceland.

In late August a few hydrographical stations were worked in Faxa Bay.

Records of Sea Surface Temperature were obtained as in previous years by means of thermographs installed in three ships, one running from Reykjavik to New York throughout the year. The other two are coastal liners which operate during the first half of the year.

Ireland

(A. E. J. Went).

Surface temperatures of sea water at the "Conigsbeg" lightship were recorded twice daily.

Netherlands

(P. Groen).

Koninklijk Nederlands Meteorologisch Instituut, Afdeling Oceanografie

1. Surface temperature and salinity observations were made in the North Sea once a week from liners on the routes Hoek van Holland—London and IJmuiden—United Kingdom (Hull and other east coast ports).

2. Three-hourly observations of surface temperature and salinity were made on all voyages to and from Ocean Weather Stations, with daily observations on station, except on voyages to station A, when observations were made only between the home port and longitude 20° W.

3. Three-hourly surface temperature observations and hourly current measurements by vertical log current-meter at 6 m. depth were made on the "Terschellingerbank", "Texel", "Goeree", and "Noord Hinder" lightvessels.

4. Comparative current measurements were made at various depths at the "Texel" lightvessel from 6. to 23. June and at the "Terschellingerbank" lightvessel from 22. to 28. August.

5. Subsurface serial hydrographic observations were made at Weather Station J in April/May.

Subsurface serial hydrographic observations were made at Weather Station M in August/September, October, and November/December.

6. Hydrographic observations were made in the Eems estuary from 25. July to 3. August and from 10. to 14. September.

Rijksinstituut voor Visserijonderzoek

1. Daily salinity measurements were made from the "Goeree", "Noord Hinder", "Texel", and "Terschellingerbank" lightvessels.

2. Hydrographic observations were made on fishery research cruises with the "Willem Beukelsz" in the southern and central North Sea.

Rijkswaterstaat

1. Hydrographic observations were made in estuarine waters.

2. Wave measurements were made in coastal waters.

3. Measurements of currents, current eddies, and lateral eddy diffusion were made by means of surface and subsurface floats off IJmuiden.

Zoölogisch Station (Den Helder)

1. Hydrographic observations were made in the Waddensea, for studies on the transport of suspended matter, the relation between water movement and bottom composition, and the production of organic matter.

2. Investigations were made on the concentration and properties of dissolved organic matter in the sea.

Norway

(J. Eggvin).

Directorate of Fisheries, Institute of Marine Research

Cruises. During 1956 22 cruises were undertaken by "G. O. Sars", "Johan Hjort", "Krill", and 3 chartered vessels.

Hydrographic investigations were carried out in Norwegian coastal waters each month of the year; in the Barents Sea in March, April, September, October, and November; in the Norwegian Sea in January, February, June, July, August, September, and December; in the Skagerak in June; and off West Greenland in July and August.

At 826 hydrographic stations 9,361 observations of temperature and 9,255 of salinity were taken. In addition, analyses of 2,404 O_2 and 1,409 P_2O_5 samples were made.

Current measurements by means of serial current-meters, were made during March and April in the Lofoten area, and in July off the coast of Möre.

Fixed Oceanographic Stations. Routine observations of salinity and temperature from surface to bottom were continued during the year at the oceanographic stations Utsira I and II, Hardanger Fjord, Sognesjöen, Skrova (in the Vestfjord), and North Cape. A new oceanographic station was established in the Kongsfjord, Svalbard (79°00′ N., 11°30′ E.) from 14. August 1956.

Sea Surface Thermograph Service. Thermograph records were obtained from 6 liners running the following routes from Bergen:— 1) to Newcastle, 2) to Rotterdam, 3) to New York, 4) to Kirkenes (East Finnmark), 5) to Oslo. Salinity samples were collected at fixed positions on these routes.

Thermograph records were also obtained from a liner running between Southampton and the Canary Islands in January, February, September, and October.

Flødevigen Sea-Fish Hatchery, Arendal

Hydrographic investigations were carried out in the Skagerak along the Arendal-Hirtshals section with the research vessel "G. M. Dannevig" in January, February, March, May, August, September, and December; in the Oslofjord and fjords of southern Norway in May, June, September, and October; and in coastal waters between Kristiansand and Stavanger in April.

The Geophysical Institute, University of Bergen

In May 1956 the M/S "Armauer Hansen" continued the studies of the dynamics of the current in the southern Norwegian Sea, this time in collaboration with the British M/S "Discovery II". The "neutral-buoyancy float" of the British National Institute of Oceanography and the bottom current-meter of the Geophysical Institute were used in conjunction with a dense net of hydrographical stations. Investigations in the fjords of western Norway were made in May, July, and October.

Weather Ship Stations M and A

The regular oceanographic investigations on board the Weather Ships S/S "Polarfront I" and S/S "Polarfront II" were continued at station M (66°00′ N., 2°00′ E.) till 30. June, and from 1. July to 31. December corresponding investigations were carried out at station A (62°00′ N., 33°00′ W.). These investigations include 6 stations per week, of which one station to 150 m., four stations to 1000 m., and one station to about 2000 m. depth.

In addition, sea surface thermograph records at M and A and between these stations and Bergen have been taken. Sea surface samples have been collected at fixed positions between the stations and Bergen.

Poland

(W. Cieglewicz).

Hydrographical observations were made in 1956 in the southern Baltic Sea; the temperature and salinity conditions were studied, as well as the oxygen and phosphate contents, at several permanent stations and at some "biological stations", which were visited only once during the period concerned.

Most of the Polish permanent stations were visited at least once in every 3 months. The measurements were made at 10-metre depth intervals. At the "biological" stations, observations were limited to only two or three depths (0 m., 50 m., and near the bottom).

Portugal

(A. M. Ramalho).

No ship being available no research work was carried out in the sea in connexion with the Hydrographical Committee.

Scotland

(J. B. Tait).

Hydrographic surveys during 1956 embraced the following regions in the months stated:—

February:	Mid-east Scottish waters and Firth of Forth.
March:	N.W. North Sea from Aberdeen to Shetland, and Minch area.
April:	Northern and Central North Sea between latitudes 56°30′ N. and 61° N.; W. Scottish waters between latitudes 57°30′ N. and 60° N.
May:	Northern North Sea between latitudes 58°30′ N. and 61° N.
June:	Shetland region and W. North Sea between latitudes 57° N. and 58°45′ N.
July:	N.W. and W. Central North Sea between latitudes 56°30′ N. and 60°30′ N.; N.E. Atlantic Ocean, S.W. of Wyville-Thomson Ridge.
August:	Central North Sea and eastern and north parts of Northern North Sea; W. Shetland and Wyville-Thomson Ridge region; S.E. Iceland waters.
September:	N.W., N., and E. Iceland regions; Faroe-Shetland Channel and S.W. part of Northern North Sea.
October:	Northern North Sea between latitudes 58° N. and 61° N.; Firth of Clyde.
November:	Faroe-Shetland Channel.
December:	Firth of Clyde.

At 856 hydrographic stations in these regions over 4,500 vertical serial temperature observations were made at standard depths from surface to bottom and about 4,350 corresponding salinity observations. Oxygen determinations to the number of 1,137 and phosphate determinations numbering 2,484, with about 20 total phosphate determinations were made in respect of selected depths at selected stations.

Almost 1,100 surface drift-bottles were distributed from which the return now stands at over 20 % for North Sea liberations and under 10 % for liberations in the N.E. Atlantic Ocean, the Faroe-Shetland Channel, and Iceland regions. Fairly consistent surface drift-bottle liberations throughout the year from and en route to the Weather Stations "I" and "J" have also yielded to date returns of a little under 10 %.

Spain

Instituto Español de Oceanografía (N. Menendez).

Gibraltar Strait, between 5°05′ W. and 6°05′ W. A cruise with the R/V "Xauen" was undertaken in January—February; systematic echo-soundings were made on 44 north-south profiles. Observations of temperature and salinity were made for correction of the speed of sound. Samples of marine sediments were collected for examination.

Atlantic Coast of Morocco: Larache. From May to July observations were made by R/V "Almadraba" 3 times a day and by R/V "Navia" at 2 stations each of 27 hours duration: Observations were made of temperature, salinity, oxygen, phosphates, and transparency.

Coastal Stations. Observations were carried out at:—

San Sebastian:	43°20′ N.,	1°55′ W.;	10 times a month; temperature.
Santander:	43°27′ N.,	3°50′ W.;	5 times a month; temperature.
Vigo:	42°14.3′ N.,	8°45.2′ W.	5 times a month; temperature, salinity, phosphate, and nitrate.
	42°09.4′ N.,	8°53.6′ W.	
	42°14.4′ N.,	8°53.2′ W.	
Malaga:	36°42′ N.,	4°25′ W.	6 times a month; temperature, salinity, oxygen, phosphate, nitrate, and silicate.

Palma de Mallorca: 39°33.7′ N., 2°37.8′ E.; 10 times a month; temperature.

Santa Cruz de Tenerife: 16°13.3′ N., 28°28.3′ W.; 10 times a month; temperature.

Instituto Hidrografico de la Marina (F. Balén).

Observations on tides for the reduction of soundings were carried out at the following localities:—

Mediterranean Sea:	Palamós, San Feliu de Guixols, Vallcarca, Villanueva y Geltrú, Almería.
Strait of Gibraltar:	Ceuta.
Bay of Biscay:	Avilés, Santona, Pasajes.
Atlantic Ocean:	El Ferrol del Caudillo, El Grove, Vigo, Cadiz.
Spanish Sahara:	Villa Bens.
Spanish Guinea:	Bata.
Canary Islands:	Santa Cruz de la Palma, Puerto de los Cristianos, Puerto de San Marcos.

Current measurements were carried out at the following positions:—

West Coast of Africa:	27°32′ N., 13°20′ W. 27°42′ N., 13°16.5′ W. 27°57′ N., 13°02′ W. 28°03′ N., 12°52.5′ W. 25°50′ N., 14°43′ W. 25°41′ N., 14°45′ W.
Spanish Guinea:	Santa Isabel de Fernando Poo. Bata. Corisco.

Sweden

(B. Kullenberg).

Regular observations of temperature, salinity, and currents were made at Bornö Station and at 10 lightships.

The two permanent sections, P and M, were worked in January and April.

A hydrographical investigation of the fjords of the Swedish west coast was made in May.

On cruises in the Baltic in March, August, and November the hydrographical conditions in the deep basins were closely studied.

U. S. S. R.[1])

(V. Lednev).

Hydrological observations in the Barents Sea were made along standard sections including the section along the meridian of Kola (eight times), the section Nordkapp—Bear Island—Sydkapp (four times) etc. Temperature and salinity of sea water were measured from the surface to the bottom at the standard levels: 0, 10, 25, 50, 75, 100, 150, 200 m. etc. Salinity of sea water was determined by the Mohr-Knudsen titration method.

Throughout the year fishing vessels took standard hydrological and meteorological observations (t°, $S\,^0/_{00}$, O_2, pH, etc.) at standard depths from the surface to 500—1000 m. in the Norwegian and southern Greenland Seas.

In the Baltic Sea hydrological and meteorological observations were made along the sections to the west of Hiiumaa Island between the Latvian coast and the Island of Gothland, to the north-west of the Bay of Gdansk and to the east of Bornholm. These observations were taken in August and partially in May.

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[1]) Oct. 1955—Oct. 1956.

Plankton Committee
1956

By E. Steemann Nielsen

Belgium
(E. Leloup).

The following observations were made:—

1. "West-Hinder" lightship:—
   (a) a plankton haul was made at the surface once a week with a net of No. 25 silk; 100 litres of water were filtered for phytoplankton;
   (b) a vertical plankton haul was made from bottom to surface once a week with a net of No. 3 silk for zooplankton.
2. Fishery research vessel "Hinders":—
   On the Gravelines—Deal line (Stations B 13, 14, 15, and 16) and off the Belgian coast (Station B 22 — off Nieuport): vertical plankton hauls were made from bottom to surface with a net of No. 3 silk for zooplankton.

Denmark
(Jul. Grøntved).

Measurements of the organic matter produced by phytoplankton in the Great Belt and northern Kattegat were continued throughout the year. The determinations were made fortnightly by means of the ^{14}C method on board the "Halsskov Rev" and "Anholt Nord" lightvessels.

Papers were prepared on the seasonal variation, ecology, and productivity of the phytoplankton at the following localities on the Danish coast:— Dybsø Fjord, Karrebæksminde Bay, and Venø Bay. The papers also deal with investigations of the autumn plankton in a number of other inlets.

Investigations were carried out throughout the year on the productivity of the benthic microvegetation in certain sheltered localities, namely, Næraa Strand, Kysing Fjord, Ajstrup Bay, and Dybsø Fjord. The ^{14}C method was employed and the experiments showed considerable differences in productivity at the different localities.

To obtain further information about primary production in shallow-water localities, quantitative investigations were started on the standing crop of the macrovegetation in such places.

Zooplankton was collected in the Sound for investigations on the vertical distributions of the various species in relation to the discontinuity layer.

During the "Dana's" cruise in the North Atlantic productivity measurements were made at a number of stations. Samples of phytoplankton were collected in connexion with these experiments, and zooplankton samples were also collected. Stramin nets and Hensen nets were used. A collection of zooplankton from the North Atlantic, made in 1955, was worked up in the laboratory.

Investigations on primary production in coastal areas were continued at Narssaq and Godthåb, in West Greenland.

The fat content of plankton from samples taken by Hensen net round Bornholm was determined.

England
No report received.

Finland
(E. Halme).

Quantitative plankton investigations were made with the R/V "Aranda" mainly in the Gulf of Bothnia, in collaboration with Swedish workers.

Mr. K. Purasjoki continued his work on the biology and ecology of the planktonic crustacean *Bosmina maritima*, and Dr. Palmén continued his work on the day/night rhythm in the emergence of chironomids; his experiments were conducted in marine waters near Tvärminne.

France
(Institut des Pêches).

Le navire océanographique "Président-Théodore-Tissiers" a récolté 474 échantillons de plancton aux filets de soie 60, de soie 200, et "Discovery", d'avril à août 1956, depuis la Mer d'Irlande au Nord, en Mer Celtique, dans le Golfe de Gascogne, jusqu'aux Açores et à la Péninsule Ibérique.

Des pêches de plancton ont été en outre effectuées près des côtes françaises de l'Atlantique, par trois bateaux-pilotes-de-pêche qui ont détecté la sardine aux sondeurs de mai à novembre.

Une centaine de récoltes de plancton a été faite par les frégates météorologiques françaises "Mermoz" et "Le Verrier" aux points "Alfa" (62°00′ N., 33°00′ W.), "Juliette" (52°30′ N., 20°00′ W.) et "Kilo" (45°00′ N., 16°00′ W.).

L'escorteur "L'Aventure" de la Marine Nationale a effectué 63 prélèvements sur les bancs de Terre-Neuve, et sur les routes aller et retour passant par les Açores et la Péninsule Ibérique, de mars à mai et en octobre 1956.

Mme le Dr. M.-L. Furnestin, du Centre National de la Recherche Scientifique, a terminé un important

travail portant sur les "Chaetognathes et le zooplancton du secteur atlantique marocain (de 1947 à 1953)".

Germany

(J. Krey).

Biologische Anstalt Helgoland

Observations on the distribution of medusae and larvae of the Tubulariidae *Ectopleura dumortieri* and *Hybocodon prolifer* in the southern North Sea was continued. (Aurich).

On a cruise of the R/V "Anton Dohrn" in June—July investigations were carried out on the frequency of occurrence and the distribution of eggs and larvae of the summer-spawning fish in the southern North Sea. As in previous years, pilchard were again found to have spawned intensively off the West Friesian Islands, and anchovy in the coastal water between Texel and Horns Reef. (Aurich).

The quantitative method for determination of organic matter (carbon) in sea water by means of wet oxydation (potassium permanganate) was improved. (Gillbricht).

In April the R/V "Anton Dohrn" carried out investigations on fish fry in the North Sea. On this occasion large numbers of *Oikopleura labradoriensis* were observed; on one section from the Dogger Bank to the Fladen Ground they were up to 10,000 per 1 m^2. (Bückmann).

Institut für Seefischerei, Hamburg

Investigations on the horizontal and vertical distributions of the microplankton in the North Sea, begun in August 1954, were continued. (Wulff).

Institut für Meereskunde, Kiel

The problem of the vertical migration of planktonic copepoda in stratified waters was pursued further, both through field observation (at anchor stations in Kiel Bay (Banse)) and by laboratory experiments; particular studies were made of the influence of a strong thermocline and of light of different wavelengths. (Hantschmann).

The biomass and its components were investigated along a section through the Baltic from Helsinki to Kiel. In addition to purely hydrographical observations the seston, chlorophyll, albumen, total and inorganic phosphorus were determined, and plankton counts made, at 27 stations from the surface to the depth. (Banse, Krey).

On a cruise through the Great Belt and Kattegat comparative studies were begun of the relation between basic production (^{14}C method) and the contents of albumen, chlorophyll, particulate phosphorus, and plankton. (Steemann Nielsen, Krey).

Basic analyses were begun to determine the composition of the net plankton in regard to organic substances, total nitrogen, albumen, and phosphorus. (Krey).

Iceland

(I. Hallgrímsson).

Zooplankton

1. R/V "Ægir": (a) a zooplankton survey was carried out in Icelandic waters, the western part of the Norwegian Sea, and in Faroe waters from 20. May to 28. June; (b) zooplankton samples were collected on Icelandic herring grounds between 3. July and 30. August.

The hauls were made by Hensen net, of No. 3 silk, between 0 and 50 m. Some of the material was worked up at sea by a shortened method. (I. Hallgrímsson).

2. R/V "María Júlía": larvae of bottom invertebrates were collected in Faxaflói in February and between May and October, and at several other places in July and August. The material is being worked up. (Á. Sigurðsson).

Phytoplankton

Water-bottle samples were collected at several depths on the Kögur, Siglufjörður, and Langanes sections in July and August and off the S.W. coast in August. The material is being worked up by the sedimentation method. (þ. þórðardóttir).

A part of the collection of fish larvae made in past years in Icelandic waters was worked up. (H. Einarsson).

Samples taken with a multidepth indicator off the S.W. coast in 1954 and 1955 were analysed. (J. Jakobsson).

Ireland

(A. E. J. Went).

No work has been carried out on plankton.

Norway

(K. F. Wiborg).

Fisheries Directorate, Bergen

The usual survey with Clarke-Bumpus plankton samplers of the distribution of fish eggs and larvae in the coastal areas of northern Norway was started in early May. The area from Lofoten to North Cape was covered twice in 4 weeks. Larvae of cod, coalfish, and herring were on the whole more scarce than in 1955. No haddock larvae were found. The brood of Norway pout was more abundant than in 1955, but no larvae were taken north of Andfjord.

Vertical hauls with a 1-metre net were made off the west coast between Lofoten and Møre at the end of April, to locate the spawning grounds of the Barents Sea haddock. A few eggs were found scattered along the edge of the continental shelf.

A few vertical hauls were made with the Nansen net in the Norwegian Sea in the last half of August.

Plankton sampling was continued at the permanent oceanographical stations at Sognesjøen, Skrova, and Skarsvåg near North Cape. A new station was established in the middle of August on the west coast of Spitsbergen, at 78°00′ N., 11°30′ E.

The plankton at Skrova during the period April—August was more abundant than in the previous year. The medusa *Aglantha digitale* was numerous throughout July. At Skarsvåg the summer maximum occurred in the middle of June, one month earlier than in 1955. A second maximum was observed at the beginning of September.

At Spitsbergen the volume of plankton apparently reached a maximum at the end of August, and was still abundant in the middle of October.

At Ocean Weather Station M, in the Norwegian Sea, the same programme as in 1955 was worked from January to the end of June. Eggs of haddock were found in moderate numbers in the $^1/_2$-hour surface hauls from the middle of April to the end of May; a few larvae were present throughout June. Redfish larvae were taken regularly during June; they were occasionally very abundant, the most taken being 260 a haul.

In the second half of 1956 plankton was sampled at Weather Station A, off the S.E. coast of Greenland, the same routine being followed as at station M. (K. F. Wiborg).

Investigations on the spawning of the sprat in the fjords south of Bergen were carried out from May to the end of September. Plankton samples were taken with the Nansen net and Clarke-Bumpus plankton sampler on three sections across the Norwegian Deep.

As part of the investigation of the biology of the Hardanger Fjord, which was started in 1955 by the Universities of Bergen and Oslo, plankton hauls were made at a large number of stations. (K. R. Gundersen).

In the Skagerak and Kattegat vertical hauls were made with a 1-metre net in the upper 50—100 metres from 25. May to 21. June, in order to locate the spawning grounds of the sprat and assess the number of eggs and the strength of the brood. (G. Dannevig).

Measurements of phytoplankton production by the ^{14}C method were made in the Norwegian and Barents Seas and in Norwegian coastal waters. The rate of production was found to be approximately the same over large areas.

New instruments for the continuous registration of oxygen content and transparency of the sea water were tried, but more experiments are needed to perfect them.

Preliminary investigations were started on the occurrence of radioactive ^{90}Sr in the sea and in marine animals in northern waters, the technique having been worked out in co-operation with other research institutions. (G. Berge).

University of Oslo (T. Braarud).

Surveys

1. Quantitative phytoplankton surveys were undertaken or continued in the following areas:—
   (a) Norwegian Sea. The microscopical examination of the samples collected on the "G. O. Sars" cruises in 1952—53 was continued. (E. Ramsfjell).
   (b) North of Iceland. Summer conditions—this survey was concluded. (þ. þórðardóttir).
   (c) Hardanger Fjord. All the year. (P. Hjelmfoss).
   (d) Tønsberg Fjord. All the year. (A. Rom).

Special Investigations on Phytoplankton

1. Studies were made of coccolithophorids with the elektron microscope. (K. R. Gaarder, E. Ramsfjell).

Poland

(W. Mańkowski).

In 1956 the research ship M/T "Birkut" accomplished six cruises in the southern Baltic as far as 56° N. In this region, between Arkona Deep and Gdansk Deep, 1806 samples were collected at 220 stations. These samples served to determine the distribution of the zoo- and phytoplankton species, for investigations on the quantitative distribution of plankton and on the distribution of pelagic eggs and fish larvae. Hensen and Nansen nets were used, together with the 1-m. ring-trawl and Copenhagen standard net. The plankton samples were collected over several depth intervals at the permanent stations.

Scotland

(J. H. Fraser).

Plankton collections were taken in 1956 on the same lines as in previous years, arranged to give information from as wide an area as possible in the northern North Sea, Shetland, Faroe Channel, and in the oceanic area of the banks to the north-west of the British Isles. Also included was a cruise along the Faroe-Iceland Ridge and around the north of Iceland in September.

The objectives and gear used were essentially as last year: the general assessment of the phytoplankton (T. Lovegrove); the relationship between zooplankton and environmental conditions and echo-traces (J. H. Fraser); the productivity of the northern seas area, in which experiments were made using the ^{14}C technique (J. H. Steele); and the broods of planktonic stages of fish, especially haddock and herring (A. Saville). Special surveys were made to follow the distribution and subsequent growth of concentrations of newly hatched herring larvae.

The special hydro-plankton surveys of the herring grounds were continued in 1956, in close co-operation with the Edinburgh laboratory, using the Hardy plankton indicator. Co-operation with the National Institute for Research in Dairying in the assessment of vitamin B_{12} in sea water from various localities was also continued.

The cultures of diatoms and dinoflagellates were maintained and extended in connexion with bio-

assay of growth-promoting or growth-inhibiting extracts from sea water (R. JOHNSTON, ROYCE A. BENTLEY). Various algal species are being examined chemically and bio-assay for their content of plant-growth hormones, and the effect of a known plant hormone, 3-indolylacetic acid (IAA), on the growth of a number of species is also being investigated. Soil extracts used to enrich synthetic culture media are also being examined for hormones (JOYCE A. BENTLEY).

Spain

(J. CUESTA).

From 14. to 28. February 1956, a cruise was made with the "Xauen" in the Gulf of Cadix and Gibraltar Strait region, as far as the Alboran Sea, on which surface plankton samples were taken at all stations.

With the "Nereida II", from the Santander laboratory, weekly observations were made throughout the year at a position about 3 miles off shore; plankton samples were taken in connexion with the Laboratory's studies on the spawning and feeding of the sardine and anchovy.

The Vigo laboratory of the I.I.P. also undertook the routine collection of plankton every 15 days. The material obtained was studied qualitatively and the pigment content assessed by HARVEY'S method.

Sweden

(H. HÖGLUND).

West Coast. Plankton samples were collected in April, both inside and outside the northern archipelago of Bohuslän. (H. HÖGLUND).

Baltic. In connexion with herring investigations, a number of hauls with the Hensen net were made in May, June, and July on the Swedish coast of the Gulf of Bothnia.

Plankton samples were also collected during the period June—October at 32 stations along three sections across the Gulf of Bothnia. The samples were examined both quantitatively and qualitatively. (A. LINDQUIST).

U. S. S. R.

(E. A. PAVSHTIKS).

Barents Sea — Bear Island Area — Norwegian Sea

In 1956 the Knipovich Polar Institute of Marine Fisheries and Oceanography carried on the series of observations on plankton, begun many years ago, in the southern part of the Barents Sea, the Bear Island area, and certain parts of the Norwegian Sea.

In all these areas vertical hauls for plankton were made with a Nansen net of No. 23/3 silk, 50 cm. in diameter. Most hauls were made with the closing Nansen net over the depth intervals of 0—25 m., 25—50 m., 50—100 m., 200—500 m.; in bad weather, however, especially in autumn and winter, single hauls were made from bottom to 0 m. and 50—0 m.

In the course of our studies of the composition and growth-rate of the plankton and of the distribution of cold- and warm-water species, we also used the material from horizontal hauls made with a fish-egg net of No. 140 silk and with nets attached to the trawl (fish-egg net with reversed cone).

From May to December plankton samples were taken in the southern part of the Barents Sea by two research groups based on the research ship "Persei-2" and on the survey vessel "Aleksei Otkupshchikov".

More than 800 samples of plankton were taken during this period. In May—June one research group, working on board the trawler "Rossiya" off the north-west coast of Norway and in the Bear Island vicinity, was engaged in studying the spawning intensity of various commercial fish and the distribution of the larvae. Plankton was caught at the same time as eggs and larvae. In spring 1956 plankton development on the south-west coast of Norway started on about the same date as in 1948.

Two groups based on the research vessels "Academician Berg" and "Professor Mesyatzev" were carrying out research work from the end of January to the beginning of April in the southern part of the Norwegian Sea.

The results of these cruises enable an assessment to be made of the rate of plankton development on the south coast of Norway, in the Faroe Islands region, and along the edges of the East Icelandic Current.

The Baltic

Catches of zooplankton were made with a "Juday" closing net of No. 38 bolting silk (mesh size 0·168 mm.) with a mouth area of 0·1 m^2. Plankton was sampled between 0 and 20 (25) m., 20 (25) and 50 m., 50 and 100 m., and bottom. Special consideration was given to investigations in February (winter plankton), May (spring plankton), July—August (summer plankton), and October (autumn plankton). The numerical strength and biomass of all species were determined from the data obtained and the predominant species of Crustacea were studied at all stages of development.

The phytoplankton was studied by the total settlement technique with water samples taken with a sampler from depth of 0, 5, 10, 20, and 50 m. (volume of samples, 0·25—1 litre).

Publications 1956

ABRAMOVA, V. D.: "Plankton as indicator of waters of various origin in the North Atlantic." Trudy Pinro, **9**.

AURICH, H.: "Über die Verbreitung von *Ectopleura dumortieri* und *Hybocodon prolifer* und ihre planktischen Entwicklungsstadien in der südlichen Nordsee". Helgol. Wiss. Meeresunters., **6** (1).

BANSE, K.: "Beiträge zur Kenntnis der Gattungen *Fabricia*, *Manayukia* und *Fabriciola* (Sabellidae, Polychaeta)". Zool. Jahrb., Abt. Systematik, **84**.

— "Produktionsbiologische Serienbestimmungen im südlichen Teil der Nordsee im März 1955". Kieler Meeresforsch., **12**.

DURAN, M., SAIZ, F., LOPEZ BENITO, M., & MARGALEF, R.: "El fitoplancton de la ria de Vigo de abril de 1954 a junio de 1955". Invest. Pesq., **4**: 67—95.

EINARSSON, H.: "Frequency and distribution of post-larval stages of herring (*Clupea harengus* L.) in Icelandic waters". Rit Fiskideildar, **2** (4).

FURNESTIN, M.-L.: "Chaetognathes recuillis par 'l'Elie Monnier' au large des côtes du Sénégal". Bull. I.F.A.N., Sér. A, **18** (2).

— "Chaetognathes de la baie de Tanger et de l'entrée occidentale du détroit". R. et P.-V. Com. Int. Expl. Méditerranée, **13**.

GILLBRICHT, M.: "Ein Verfahren zum oxydativen Nachweis von organischer Substanz im Seewasser". Helgol. Wiss. Meeresunters., **6** (1).

GRØNTVED, JUL.: "Planktological Contributions. II. Taxonomical studies in some Danish coastal localities". Medd. Danmarks Fisk.- og Havunders., N.S., **1** (12).

LEROUX, S.: "Phytoplancton et contenus stomacaux d'huîtres portugaises (*Gryphaea angulata* Lmk.) dans le bassin d'Arcachon". Rev. Trav. Inst. Pêches Mar., **20** (2).

MARCHE-MARCHAS, I.: "Présence de plancton rouge (eaux rouges) sur les côtes du Sénégal et de la Mauritanie". Bull. I.F.A.N., Sér. A, **18** (1).

MARGALEF, R.: "Informacion y diversidad especifica en las comunidades de organismos". Invest. Pesq., **3**: 99—106.

— "Rotíferos marinos del plancton de la ria de Vigo". Ibid., **4**: 131—35.

— "Estructure dinámica de la 'purga del mar' en la ria de Vigo". Ibid., **5**: 113—34.

MAUCHLINE, J.: "Notes on the difference between *Calanus finmarchicus* (Gunn.) and *Calanus helgolandicus* (Claus)". Bull. Mar. Ecol., **4**: 135—40.

POPE, J. A., and GLOVER, R. S.: "The Hardy Plankton Indicator: a study of the variations between catches taken by day and by night". Bull. Mar. Ecol., **4**: 115—33.

PAVSHTIKS, E. A.: "Seasonal changes in plankton and feeding migrations of herring". Trudy Pinro, **9**.

ROSSIGNOL, M.: "Sur la présence d'Ebriédiens dans le plancton de la baie de Pointe-Noire". Rev. Trav. Inst. Pêches Mar., **20** (1).

RUDAKOVA, V. A.: "Reports on feeding of Atlantic Scandinavian herring". Trudy Pinro, **9**.

SAVILLE, A.: "Eggs and larvae of haddock (*Gadus aeglefinus* L.) at Faroe". Mar. Res. Scot., 1956, **4**: 27.

SOUSA ET SILVA, E.: "Contributions à l'étude du microplancton de Dakar et des régions maritimes voisines". Bull. I.F.A.N., Sér. A, **18** (2).

STEELE, J. H.: "Plant production of the Fladen Ground". J. Mar. Biol. Ass. U.K., **35**: 1—33.

VIVES, F., & LOPEZ BENITO, M.: "El fitoplancton de la ria de Vigo desde julio de 1955 a julio de 1956". Invest. Pesq. (in press).